

MODEL *Airplane* NEWS

MAY 1942

20c



TORPEDO SQUADRON 2



FLASH!

See page 20 for
plans and construction
of the first plane in U. S. Navy's
10,000 Model Program!

NATIONALS FLYING SCALE WINNER



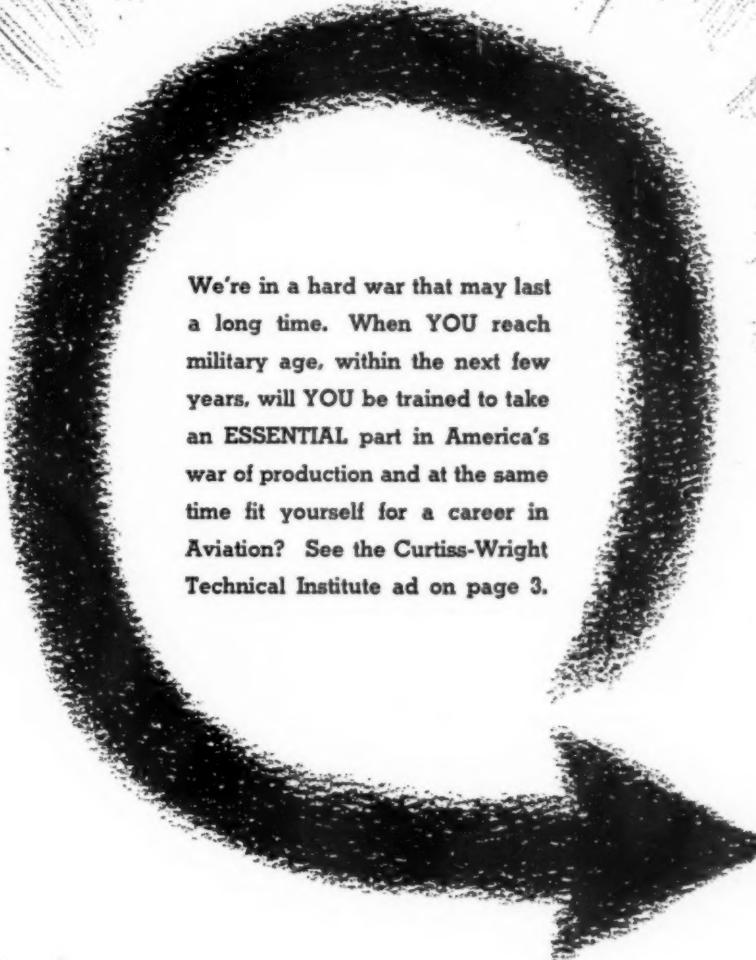
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Special to MODEL AIRPLANE NEWS

FROM its Los Angeles reporter, *FLASH NEWS* has received an eye-witness account of what has been reported as the first enemy air raid on continental U.S. in this war. He writes: "I was awakened by the firing at exactly 3 A.M. and first thought that bombs were being dropped as they seemed to be exploding at ever-increasing nearness. I went out into the front yard and was immediately confronted with our local Air Raid Warden who told me to cut off the lights. Afterwards I watched the activity which, for all of its severity, was an exciting and colorful display. A huge cone of searchlights seemed to be centered over Hermosa Beach (15 miles west) and following a path southward to the vital Long Beach-San Pedro area. The object, or objects, moved at an extremely slow rate of speed, certainly far too slowly to be a modern military airplane. The huge cone, composed of at least fifty searchlights, moved southward and the anti-aircraft firing continued heavily and unabated. Various colored explosions were seen. The firing lasted about one-half hour but the black-out and alert continued throughout the night and until well past daylight, the All-Clear sounding at 7:30 A.M. Powerful sirens have been mounted at major intersections throughout Los Angeles. The blackout signal is a series of long, strident blasts, the all-clear a series of short, crisp blasts. Air raid wardens functioned perfectly maintaining the blackout by ringing doorbells and warning the occupants of lighted houses. Other wardens halted traffic and moved the passengers off the streets. Thousands of aircraft, shipyard and other national defense workers were from one to three hours late to work due to continuance of the alert well past starting time at the various plants. Although I was nearly 15 or 20 miles from the center of activity, I was impressed by the accuracy of the fire, many bursts landing in the exact center of the searchlight cone. The papers carried news of a Japanese plane having been downed at 153rd and Vermont Avenues but after making the trip I found no airplane there."

Prime question seems to be were there or were there not Japanese planes over Los Angeles? Secretary of the Navy Knox says: "The raid was a phony!" Secretary of War Stimson says: "No planes were downed, no one was injured, no bombs were dropped!" Stimson later issued a report to the effect that there were Japanese airplanes participating in the raid. Many government officials feel that the presence of enemy planes over Los Angeles or any other U.S. city is a confidential and restricted military fact. *Flash News* feels that the people have a right to know whether enemy planes are over their homes and possessions or not!

Another step towards an independent Air Force has been taken with the reorganization of the Army by President Roose-

velt. This arm of the service is now divided into three groups: The Army Ground Forces, commanded by Lieut. General Leslie J. McNair; the Service of Supply, commanded by Major General Brehon B. Somervell and the Army Air Forces, commanded by Lieut. General Henry H. Arnold. This now gives the Army Air Forces at least an independent standing within the Army structure for it will now have its own administrative powers including its own general staff. General Arnold is now preparing a general reorganization of the various commands within his Forces to be announced shortly.

Another high ranking German officer has been "killed" in an airplane "accident." This time it is Major General Fritz Todt, famed as the Nazi's "No. 1 Builder" having engineered the construction of the Siegfried Line, and officially the Third Reich's Minister of Munitions. Todt designed and supervised the construction of Nazi's fortifications on the Russian front which, although a hurried job, has stood them in good stead in resisting the Red soldiers' counter-attacks.

Famous aviation names are now flying for Uncle Sam among whom are: Douglas Corrigan, trans-Atlantic "wrong-way" flier who electrified the aviation world with his amazing flight, now with the Ferry Command, ferrying huge bombers across country and perhaps across oceans; Harold Gatty, who with Wiley Post broke the world's round-the-world flight time, now an Army flier on duty in the East Indies; and the famous Key Brothers, who established an endurance re-fueling record, now crew members of a Flying Fortress last stationed in Batavia.

Los Angeles has opened a giant central aircraft hiring office which plans to say: "You're hired!" to 50,000 new workers before the end of 1942. Purpose of the office is to aid the applicant who formerly had to tour the 9 major and 14 minor aircraft factories in that vicinity. This also will discontinue crowded conditions formerly found at aircraft factory employment offices. All aircraft factories in the greater Los Angeles area are now under tight and extensive Army patrol with no admittance within a two block radius to non-workers.

America's largest land-plane, the giant Douglas C-54, went through first official test flight recently with little fanfare and few witnesses. The giant ship, development of the famed Douglas DC-4, has a wing span of 117 feet 6 inches and gross weight of over 45,000 pounds. The four twin-row Wright engines develop a total of 5400 horsepower. The ship has undergone many major re-designs, the triple tail giving way to a single vertical surface and the giant landing gear wheels being divided up into two smaller wheels on each landing gear

(Continued on page 59)

13TH YEAR OF PUBLICATION

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MAY, 1942

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Edited by
Charles Hampson Grant

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Model Airplane News - May 1942



Aviation has JOBS for thousands but CAREERS only for trained men!

America's tremendous war effort will soon find every young man in the front line—either of battle or production. This is primarily a war of production and the Aviation industry has been forced to accept thousands of semi-skilled, single-phase workers from cheap "quickie" courses. BUT—the only man who is ESSENTIAL to the industry is the man with the long-range training to fill any of the important supervisory positions to which he may be assigned. Only by such training can YOU be unquestionably designated as ESSENTIAL to vital war production—and continue to be essential to the industry through the readjustments that must follow when war production shifts back to peace time schedules. Only the Career Man is essential to aviation in peace or war!

The executives who have made aviation THEIR career want only those men with the intelligence and sincerity to select aviation as a life work and to adequately prepare themselves for it by proper training. They know that the value of each man is largely determined by the ability and experience of those who train him for his career. And they know that Curtiss-Wright Technical Institute graduates are—and for many years have been—precisely trained to fill the industry's exacting requirements.

Located in the very center and a very important part of Southern California's great aircraft industry, with its more than two billion dollars in unfilled orders, Curtiss-Wright Tec has come to be recognized as the nation's leading institution for the training of Aeronautical Engineers and Master Mechanics. Mr. Donald Douglas, President of the great Douglas Aircraft Company, chose

this school for his own son's training, which pointedly indicates the high standing Curtiss-Wright Tec has attained in the aircraft industry since its establishment in 1929.

It is imperative that before you invest in a course of career training you determine what the returns will be on your investment... for your choice of a school in which to take your training will determine how much money you will make all the rest of your life.

Curtiss-Wright Tec's career training is carefully designed to do just one thing:—TO MAKE MONEY FOR YOU, so upon graduation you can be independent and self-supporting for life. Our thousands of successful graduates have proven that Curtiss-Wright Tec training gets results and always pays, since it trained them in advance for the highest position they could ever expect to occupy. It can do the same for you.

This school has never guaranteed positions for its graduates, but practically every graduate has obtained immediate employment and is advancing rapidly. The demand for our graduates far exceeds the supply, and we honestly believe that every student who enrolls here will be able to obtain, with our assistance, immediate employment upon graduation.

WARNING!—"Don't miss the boat." The greatest opportunity in your lifetime exists today! There never was such an opportunity in aviation for you; there may never be another. A position awaits you. Insure for yourself a steady income and independence for life. DON'T FOLLOW—LEAD! Send in your enrollment before you "miss the boat."

Offering specialized and proven training in AERONAUTICAL ENGINEERING & MASTER MECHANICS

No Flying Involved

THIS TOWER OVERLOOKS AVIATION'S MOST DISTINGUISHED SCHOOL OF AERONAUTICS

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UNDER PERSONAL SUPERVISION OF MAJOR C. C. MOSELEY, OWNER, SINCE ITS ESTABLISHMENT IN 1929

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NAME _____

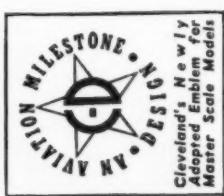
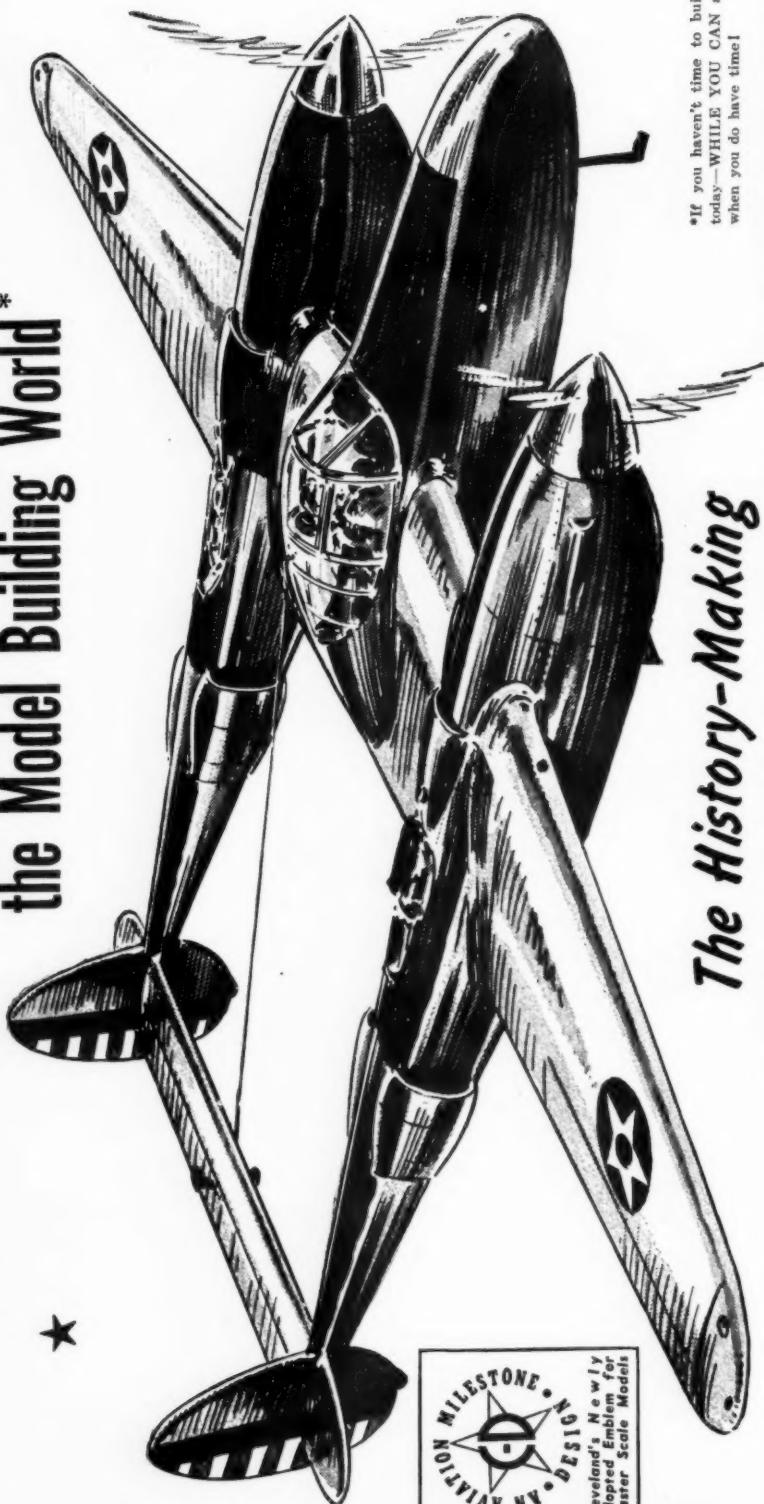
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N-5

* This Cleveland "Model of the Month" Has Completely Captivated the Model Building World*



The History-Making

LOCKHEED P-38 "LIGHTNING"

*If you haven't time to build it now, get it today—WHILE YOU CAN and have it ready when you do have time!

Never has a Cleveland model been given such an enthusiastic welcome as this super-detailed War Fighter. An instant hit from the very beginning, sales have climbed in a dizzy spiral, soaring way beyond all expectations. And small wonder—when you study the minute detailing, and wealth of refinement shown in the above picture. The prototype, you recall, has been shrouded in great secrecy because of its "furious" performance, for which the U. S. Army claims it the fastest thing on wings, since it apparently travels over 500 M.P.H. It flies so fast, its sound does not reach the ears until it's way past you. Cleveland's beautifully realistic model will also give a good account of itself in high-speed flying propelled by its two rubber strand motors which are encased within the natural tail booms. This design certainly should be a "must" for every scale model builder. Span 38 $\frac{1}{4}$ ". Length 27 $\frac{5}{8}$ ". Colored yellow wings and tail, balance blue. Complete kit SF-85 only.

FREE C-D MODELS
For Men* in the Allied Air Corps
for letters about how model-building has helped them in their flying work, if published in our ads, we'll send them your own way—don't worry about spelling, or appearance—a post card will do. Get busy NOW. Send yours today. Also mention what scale Kit you desire if your letter is published. (*includes students or graduates.)

AIR WAR IN THE



PACIFIC

**Battle strategy of our war with Japan and
the price she has paid for objectives gained**

by **LARRY McROBERTS**

OUT of the maelstrom of savage destruction that is this air-war in the Pacific, one fact has materialized crystal clear: our foe is a mighty invader with a strength, a skill and a daring which is well nigh equal to our own. We now know that the treacherous attack on Pearl Harbor that fateful Sunday morning of December 7th, 1941 was no hit-and-run thrust. Rather was it the opening burst of a gigantic barrage which the mind of peaceful man can barely grasp. The very magnitude of this Japanese aggression has astounded the democratic world, but from it an analysis has indicated the course and deliberate purpose of those who would crush us. Three different and distinct types of warfare are now being waged on this tortured planet and each

of them has forged a single weapon, born in peace but nurtured in the shot and shell of conquest: the modern military airplane.

The brutal Blitzkrieg land assault of the Nazis, the parching struggle in the Libyan desert and the lightning-like island fighting of the Japanese have used the warplane, in its manifold types, for their most telling blows. It is ghastly yet ironic that our enemies should have seen the inherent deadliness of the airplane sooner than ourselves!

Hitler's scheme of world power is now moving into its last and most desperate phase: the consolidation of gains into a vast, crushing victory. Phase I comprised conquest of Europe, now complete except for Russia and valiant England. German Stukas smashed Poland to a pulp; Mes-

serschmitts pounded France into a shambles; even motorless gliders were tools in the deluge upon Crete. Valorously Hurricanes and Spitfires of the Royal Air Force beat back the onrushing tide of the Luftwaffe's Junkers and Heinkel bombers and staved off, perhaps forever, the tensely anticipated invasion of England. Russian "Mosca" and "Chato" fighters stood wing to wing with Hitler's latest Heinkel and Focke-Wulf fighters, many times rending the attack in twain.

Phase II comprised conquest of Africa and corking of the vital Mediterranean, still a savage struggle, still a battle of the sun-boiled skies as well as the sand-choked desert. Against swastika-clad Messerschmitt and mace-emblazoned fighters of Italy have thundered the cocardes of

(Top) The Curtiss P-40D has downed more Jap aircraft than any other American plane. (Below, left) A scout dive bomber patrols the air over its carrier. (Right) An observation plane lands in the smooth wake of its mother cruiser



the R.A.F. borne equally by Hurricanes and Yank Tomahawks, a name long to live in the annals of battle.

More deadly, perhaps, certainly more periling to our lands and our loved ones, is Phase III comprising conquest of the Pacific centering about capture of Singapore and closing of the far-eastern waterway. Like clockwork this master plan has been executed, temporary setbacks never for an instant endangering the long-range strategy.

Guam, which we so piteously, perhaps stupidly, refused to fortify, was the first victim falling on December 12th, 1941 after five days of desperate fighting by an intrepid band of "Leathernecks." Then fell Wake on December 23rd and Hong Kong on Christmas Day of 1941. The most bitter blow of all came on the day after New Year's when Manila fell and General Douglas MacArthur, a name forever hallowed in America's history books, began his valiant stand. Southward moved the yellow hordes taking Tarakan (Borneo) on January 11th, Balikpapan (Borneo) on January 25th, Moulmein (Thailand, formerly Siam) and Amboina (Amboina, Dutch East Indies island of Ceram) on January 31st, Makassar (Southern tip of the Celebes) on February 10th and Singapore, long believed the world's mightiest naval fortress on February 15th. Under a master grand strategy there need be no pondering of the next move nor can there be a respite, a gathering of force, a re-establishment of supply lines. At Singapore the Japanese drive split into two segments, one storming Java with its ultimate aim, Australia, next in line. The other headed Northwest and has already cut the vital Burma Road lifeline near Rangoon. Its ultimate aim: India and closing of the Indian Ocean. Should this grand strategy prove a success and the route to the Suez closed, then should Hitler's forces close the Mediterranean west of Suez, the civilized world would be cut neatly in twain. Asia, mother of continents, would be imprisoned, time starving China and Russia. This ultimate aim (all too clear with Hitler's massing of armies in Sicily, Greece and Bulgaria, and Hermann Goering in Italy laying the groundwork for his Luftwaffe's springboard) would slice America free, cast it adrift in a sea of thief-sharks.

To crush America, the last bastion of freedom, does not require conquest of its shores, bombardment of its cities. The simple operation of an isolation-ectomy would lay us prone before the economic

(Continued on page 38)



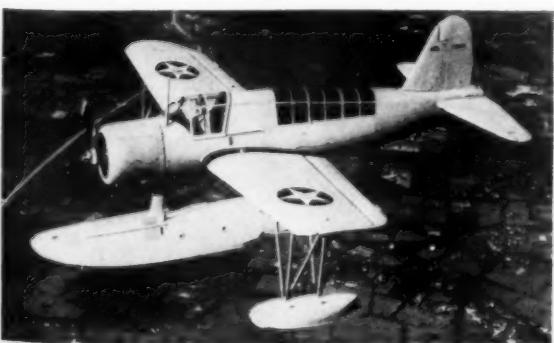
Boeing Flying Fortresses like this have pounded Jap transports to pieces



Fleets of these Brewster Buffaloes have fought furious battles for Java



An early model of the Grumman carrier fighters that defeated the Japs at the Gilbert and Marshall Islands. (Below, left) The new Vought-Sikorsky OS2U-2 that is doing scouting work for the fleet. (Right) Consolidated heavy bombers like these will soon be carrying mass bombing to the island empire



Model Airplane News - May 1942



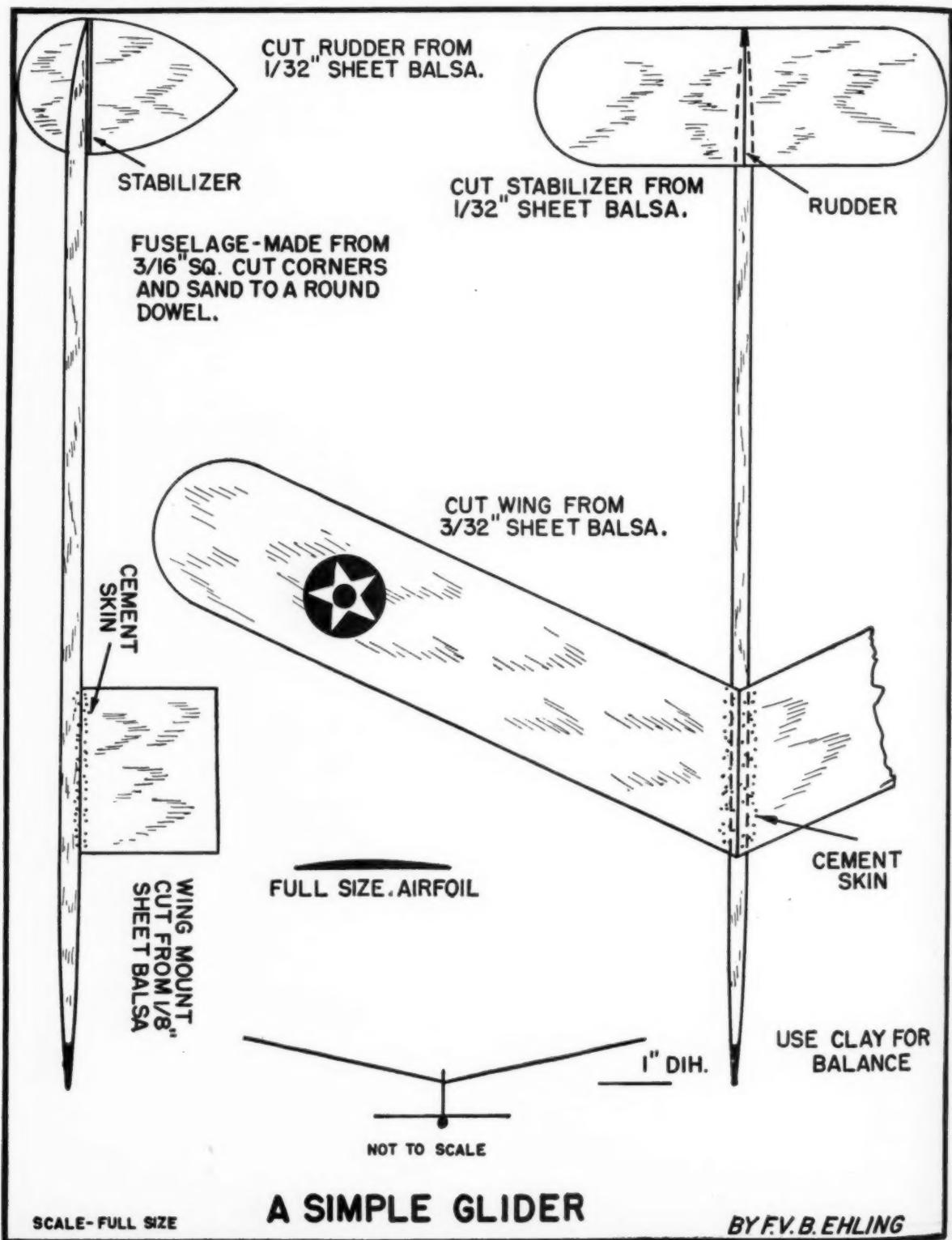
"TINY" INDOOR GLIDER

Novice Model No. 1

Many model plane clubs are greatly in need of simple building and flying projects suitable for beginners' instruction, indoor club contests or practice flying. Simple looking models are not always easy to

build and fly; models thoroughly tested and used successfully by other groups provide greatest satisfaction and therefore are advisable.

Here are two such models that have

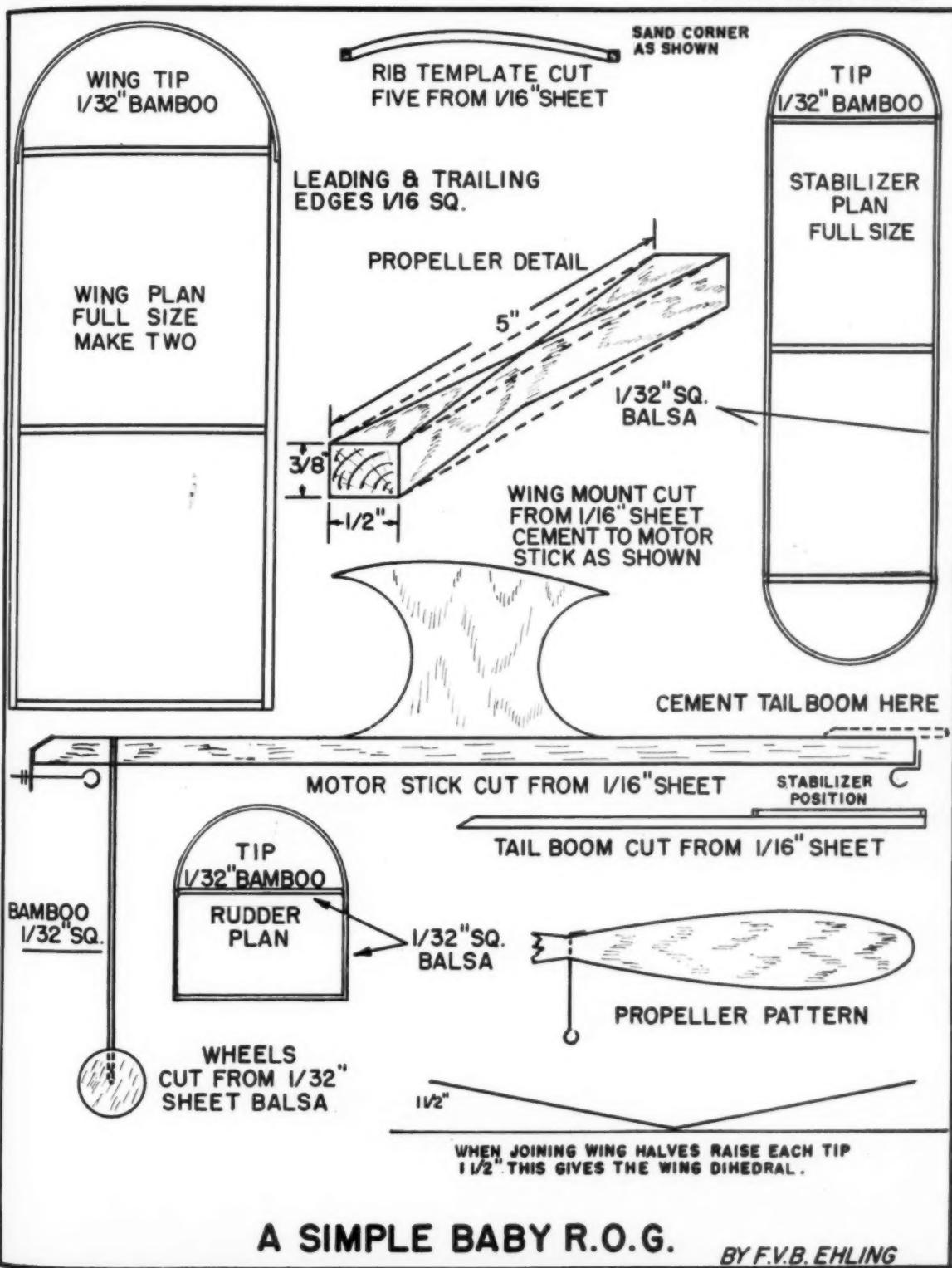


given pleasure and valuable instruction to a number of clubs. When built as a club project by each member, indoor contests can be held in auditorium or school gym. Other simple "Tiny" planes of various

types will appear in future issues of this magazine. The building of a series of such models, each progressively more difficult, will soon bring novices into the sphere of expert contest fliers and will enable them to contribute more fully to national defense.

"TINY" INDOOR R. O. G.

Novice Model No. 2





New Sikorsky flyingboat Excalibur, world's longest range commercial plane, ordered by U. S. Navy for long range transport

FRONTIERS

Glimpses of planes making world history

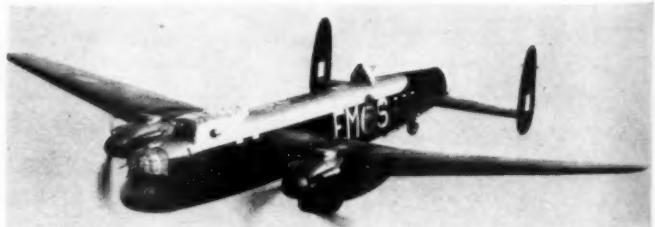
(Below) Highly maneuverable Russian Mosca 1-16 snub nose fighter taking off to give the Germans a little trouble



(Below) Messerschmitt 110 captured by the British in Libya now serves as communications plane



Grumman Navy fighters of the type that blasted seven Jap planes at Wake Island. Also used on aircraft carriers



Avro Manchester, one of Britain's latest two-engine bombers now operating successfully over Germany

Brit. Comb.



Beauty on wings! Replica of a full scale Air Transport P2, an excellent choice for a flying scale model, with long fuselage and parasol wings

Just like a big ship in flight

NATIONALS WINNING MINIATURE AIR TRANSPORT

The contest flying scale model that won first and second places at the 1941 national meet

by WALTER S. EGGERT, JR.

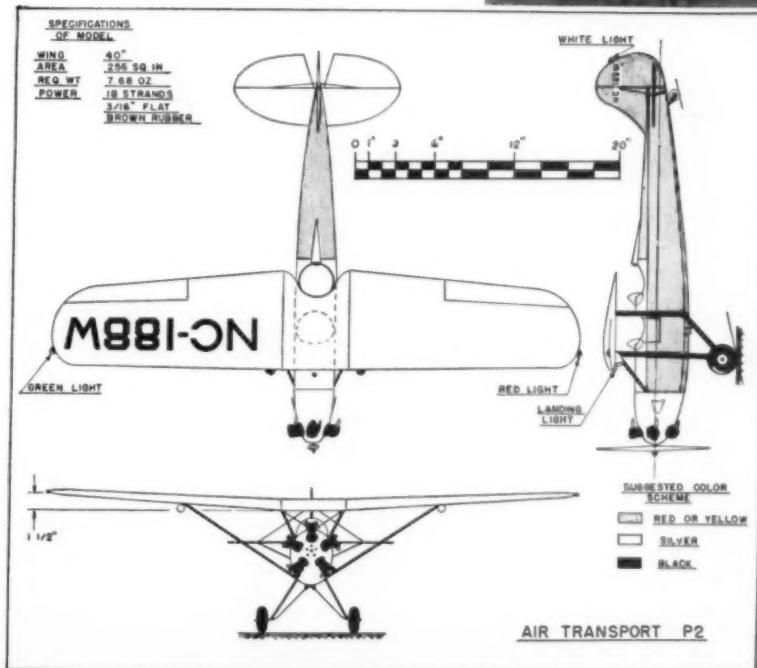
IN SELECTING data and other information preliminary to building a good flying scale model many things have to be taken into consideration. First select a ship, one not too modern, that has a rather long fuselage and large tail surfaces. Then look through all the airplane magazines and get as many details as possible; or if it is a modern ship, you may be able to get information from the company that builds the ship.

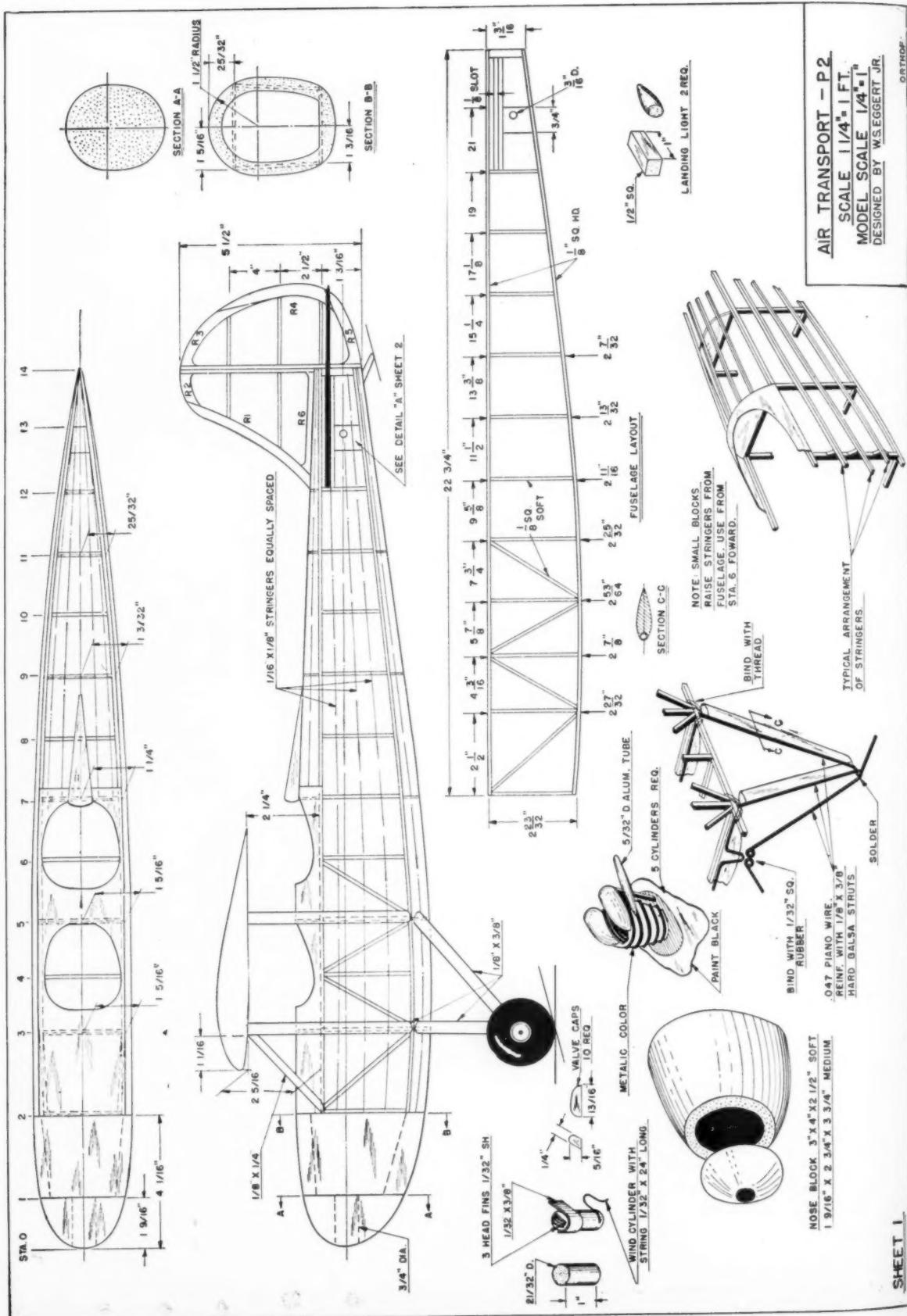
The Air Transport P2 scaled down to half-size makes a very fine indoor as well as outdoor flying model and many indoor meets have been won with it. The entire structure can be scaled down directly if desired. On a half-size model most of the extra bracing and wire landing gear may be omitted for lightness. A full color doped model has averaged 45 seconds indoors.

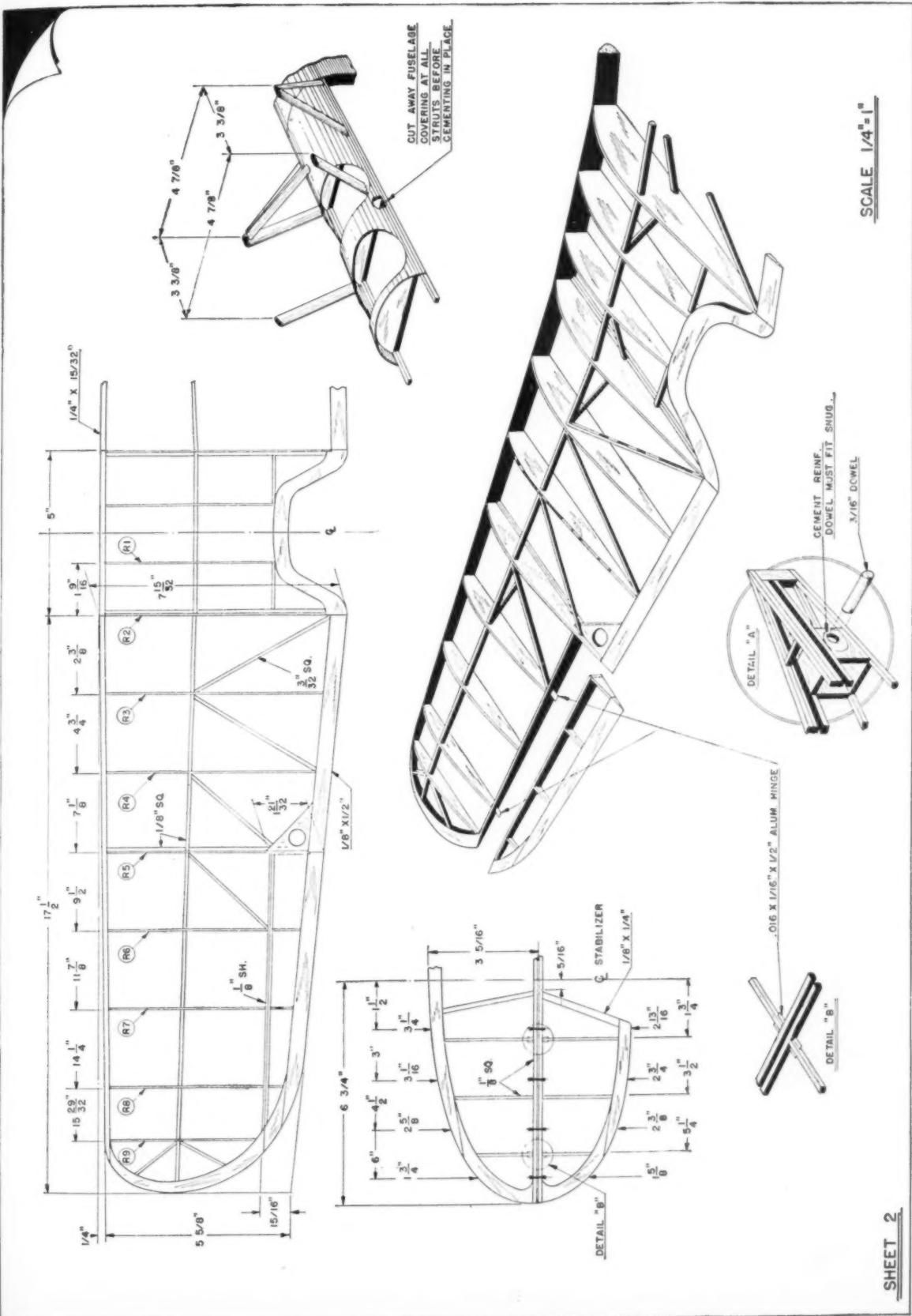
The P2 makes a wonderful flying model due to its long fuselage, extra large tail surfaces, parasol type wing and slow flying speed. It is the model that helped the author win The Philadelphia Flying Scale Model Championship three years in a row, and another model built from original drawings took 2nd place at the Nationals, flown by Ray Beaumont, of Philadelphia.

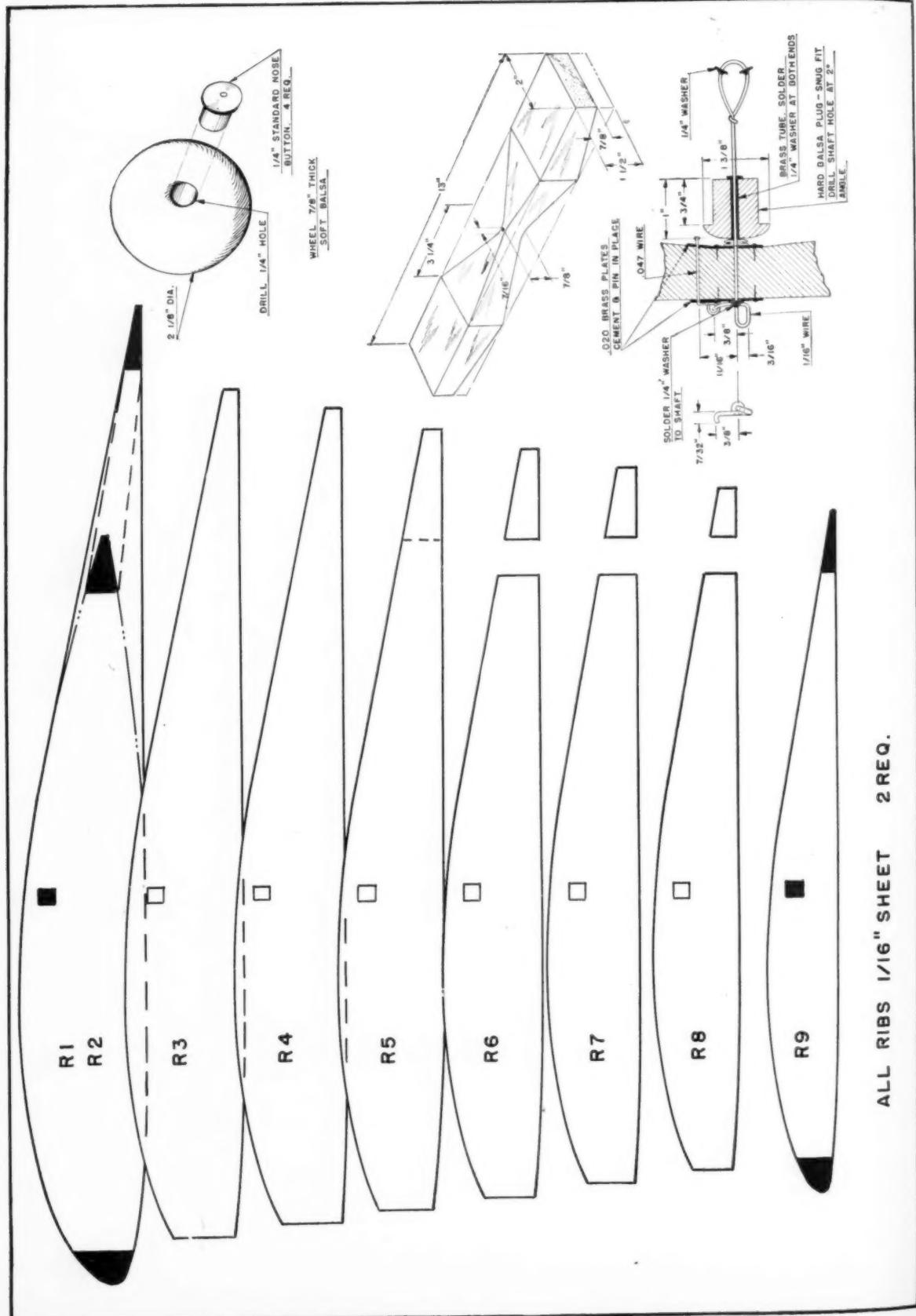
This ship is not one of those lucky combinations that cannot be duplicated; four or five have placed consistently at
(Continued on page 36)

The author with his plane and the trophy it won at the national meet









NOTE: PARTS 1/8" SH. EXCEPT WERE
STATED.

S4 2 REQ.

S3 2 REQ.

S2 2 REQ.

W4 2 REQ.

W3 1 REQ. 1/4" SH.

COCKPIT
TEMPLATE
1/32" SH.

W2 2 REQ.

W1 2 REQ.

1/4" SH

BOTTOM

STA. 3-5

STA. 7

STA. 9

STA. 12

FULL SIZE

SI IREQ.

R2 1 REQ.

R5 1 REQ.

RI IREQ.

R3 IREQ.

R4 1 REQ.

R6 1 REQ

TOP
STA. 2-3 & 4

STA. 7

STA. 8

STA. 11

STA. 12

NOTE: ALL
FUSELAGE
FORMERS
1/16" SHEET

AIR WAYS

News of models, builders and activities from all parts of the world

WITH decreasing supplies of balsa wood and rubber it may become necessary for model builders to construct planes of heavier wing loading and power loading without the necessity of creating an artificial condition in this respect by means of official arbitrary rules.

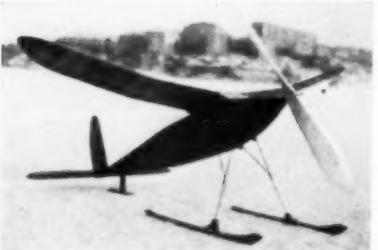
This year the rules will require a 10 oz. per sq. ft. loading or greater, and possibly a power loading of 150 oz. per cubic inch piston displacement. This will make it possible for model builders to substitute hard wood for balsa in the structures of their planes and will allow more latitude



1. A perfect scale model of the North American XP-51 by Ground School Instructor R. W. Mitchell



2. Willis Dreher's endurance job designed by Wally Simmers



3. Anders Hirstrom makes winter flying a real thrill by using skis. (Below) 4. A completely water-tight gas model fuselage for seaplanes



for design with these heavier materials.

Apparently an all-knowing Providence foresaw many of our difficulties and has been molding the rules accordingly. There will be many benefits, in fact, that can be derived from this setup. First of all, the rate of climb will be cut considerably and models in a given length of time will not attain the altitude that they had under the large power loadings and wing loadings of the 1941 rules. In fact instead of a climb of 400 ft. in 20 sec. an altitude of 150 ft. may be expected.

Many builders contend that this heavier wing and power loadings will not prevent ships from being lost on thermals. This unquestionably is true, however, it is not the issue. The objective is to reduce the number of ships that are lost because of thermals. It is impractical to suppose that an occasional ship will not be lost under any conditions or rules. With the lower maximum climb there is no question but that more ships will return safely to the hands of their owners and not be carried aloft over miles of countryside and finally come to rest in some unobserved spot.

A number of modelers advocate "dethermalizers"; that is, a gadget on the model that will operate to produce an excessive sinking speed when the motor ceases turning. This may produce the effect of reducing ships lost by thermals but, on the other hand, it has a detrimental effect in the design of planes it encourages. Can you visualize yourself as a modeler entering a contest with such a gadget as a feature to be used?

Your one idea is to have your ship climb at a tremendous speed to as great a height as possible, then immediately have it drop at a given rate of speed in excess of the rising rate of thermals so the ship will be sure to return to Mother Earth. What kind of planes will these requirements pro-

duce? First of all, it would be advantageous to build a ship with tremendous power and very little wing area, and at the top of its climb to disengage a parachute to act as a dethermalizer. The ship then would settle gradually at the required rate, suspended to the 'chute. This is hardly the type of plane that will be of interest or of fundamental value to contestants that build them. In fact it narrows down the physical requirements to such an extent that eventually only one type of plane will be used to accomplish the desired result—a similar situation to the one now in existence.

On the other hand if we use the method of heavier wing loading and power loading it places a premium on efficient design, not trying to kill efficient design as in the first case. Under such rules a plane will be designed with greater care in order to attain performance with greater weight and less power. Thus the very elements of aviation are encouraged which later will be of extreme value to an aviation career. It will encourage the efficient design of full scale aircraft when it is the modeler's job to design them; he will be familiar with the problems involved.

The Contest Board of the AMA has been struggling with this problem and has finally proposed a set of rules which brought out the full facts recently when they were discussed by members of the Detroit Chapter of the AMA.

1. The model fliers realize the need for keeping their plane from flying away for the two reasons mentioned; (a) interference with civil air protection watchers; (b) conservation of materials.

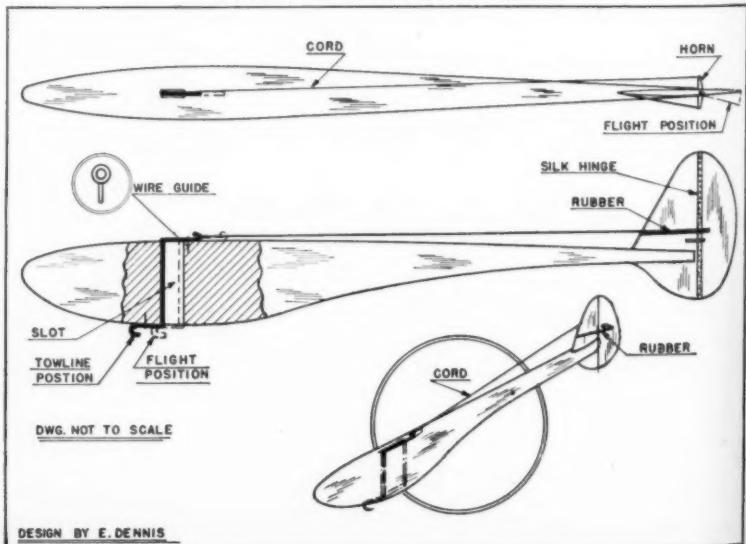
2. Dethermalizers are imperative!

3. It is impossible to force the model builder to use a dethermalizer, but the rules should make their use advantageous.

4. Voiding all flights of over three min.

(Continued on page 48)

5. Rudder control for tow-launch glider





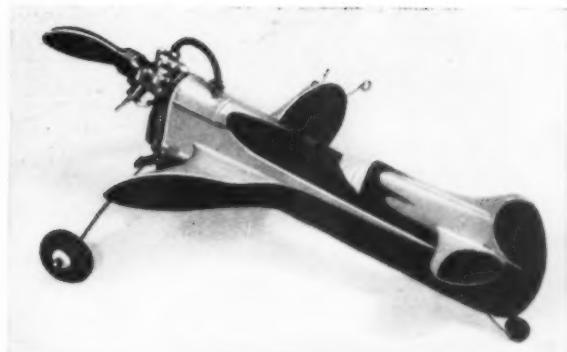
6. A flying model built without balsa by a Japanese boy; we can do it too when balsa becomes unavailable



8. Gosta Hellstrom of Sweden with his Wakefield model



9. A Canadian model builder's friend "lends a hand" with a smile



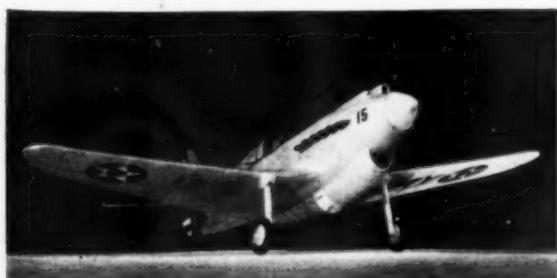
7. The most unbelievable gas model ever built; it flies perfectly with only a 9 1/2" wingspread, and powered with a Super Atom



10. What is this fellow doing?—three guesses!



11. Ken Allerton's B job with efficient "V" tail is very stable, with line of thrust and c.g. high in the fuselage. (Below) 12. Bob Deats' beautifully built flying scale P-40 pursuit



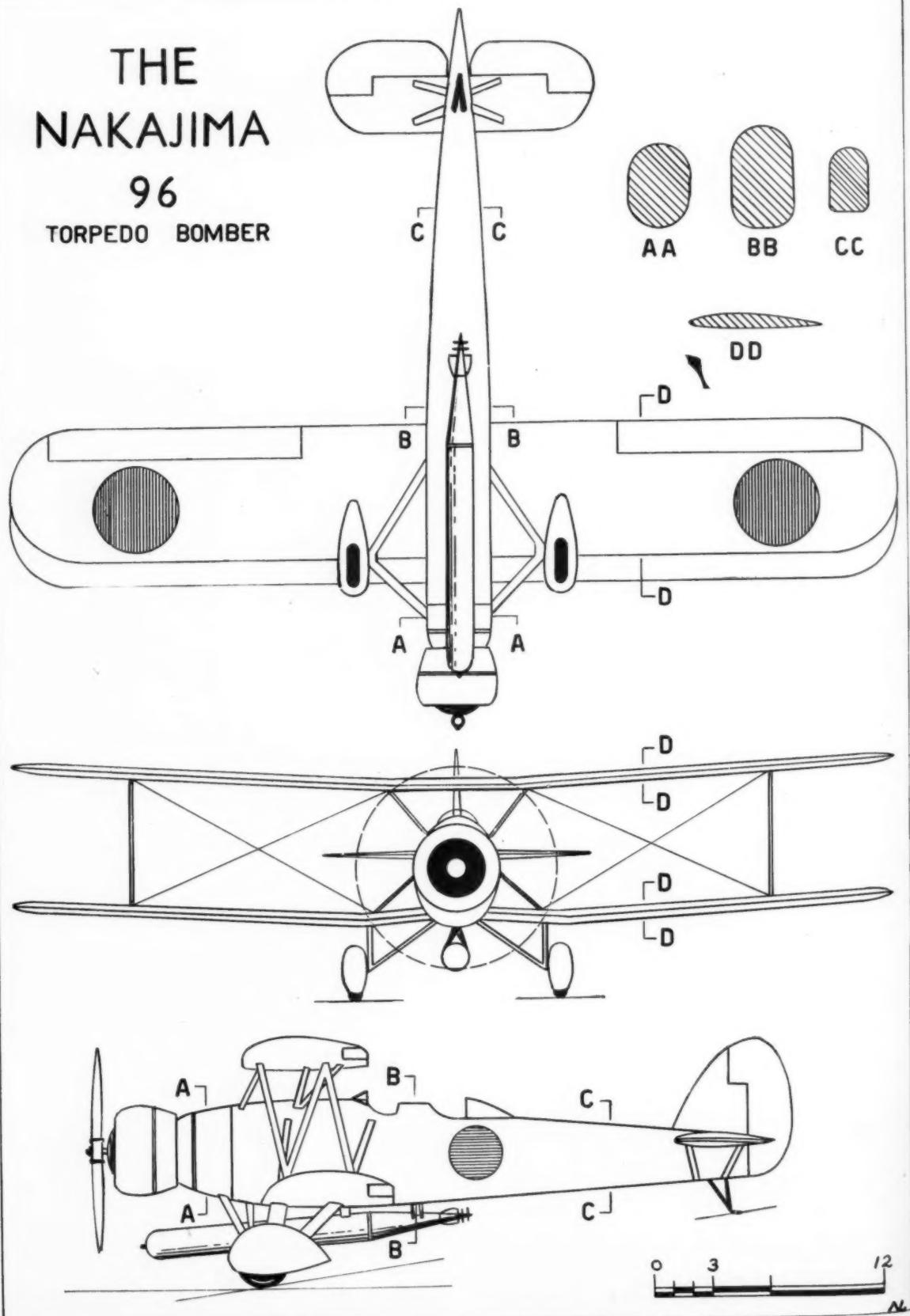
Model Airplane News - May 1942

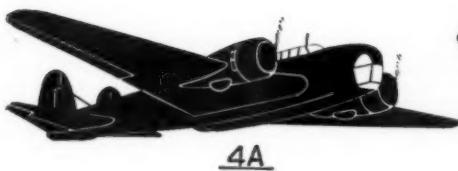


13. The Mercury Mites of Brooklyn meet to discuss models (Below) 14. Bill Steese with his record breaking hydro



THE
NAKAJIMA
96
TORPEDO BOMBER

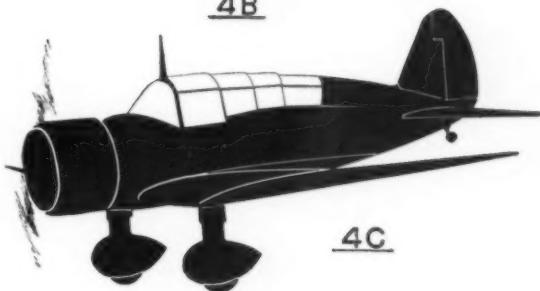




4A



4B



4C

PLANE 4A—Known as Army type 98, in reality a Fiat BR 20M first adapted by the Japanese Army in 1938. Eighty aircraft were purchased by the Nipponese and commissioned immediately. After extensive trials, the airplanes proved satisfactory and arrangements were made to produce these in Japan under license. Since then, large quantities of these bombers were delivered to Army squadrons and have seen considerable action in every Jap theater of operation including Pearl Harbor.

The craft was originally powered by two 1,030 h.p. Fiat A80 RC41 air cooled motors. These it is believed are also being manufactured under license by Japanese manufacturers at the present time although under a Jap name. Construction is all metal with both metal and fabric covering.

The craft mounts three flexible machine guns: one in the nose, another in a retractable Breda turret at the top of the fuselage, and another in a prone position beneath the fuselage aft of the wings. Normal flight crew numbers five men. The craft is known to have a 2550 lb. bomb capacity with a range of 1,240 miles.

Dimensions are as follows: Span, 70 ft. 6 in.; length, 52 ft. 10 in.; height, 14 ft. 1 in.; wing area 796 sq. ft. . . Weight—empty 14,300 lbs.; loaded 22,220 lbs.; wing loading 27.9 lbs. per sq. ft. . . Max. speed, 268 m.p.h. at 16,400 ft. Max. speed at sea level, 233 m.p.h. Max. cruising speed, 217 m.p.h. Initial rate of climb 1,000 ft. per min. Service ceiling 29,520 ft.

Plane 4B—The Kawanishi 96, dive bomber. Used aboard carriers, the Kawanishi 96 acts as scout bomber and torpedo carrier alternately. It is powered by an air cooled radial engine of unknown manufacture, and carries a crew of two in addition to a

half ton of bombs. No details as to performance or armament are available at this time.

Plane 4C—The Nakajima 98, two seat light bomber, details of which are not available as yet. The craft is believed to be used by Army squadrons and described as "quite formidable."

(Note: Information regarding the Kawanishi 96 and the Nakajima 98 will be published for M.A.N. readers and SKY SCOUTS the moment it becomes available.)

The three view published in last month's issue was that of the Kawanishi 95, details of which appeared in the same issue in SKY SCOUTS.

VICTORY

SKY SCOUTS

Learn to spot enemy planes and help defend America

LESSON 4

THE Sky Scouts organization is growing with leaps and bounds. Already over 2000 entries have been received and headquarters staff is busily engaged in classifying and recording them.

The response of patriotic young Americans has been tremendous, exceeding all expectation and causing delay in determining those who have qualified for the first silver Sky Scout pin.

Qualifying Scouts (those who have sent in two sets of correct answers) will be notified as soon as possible so each can send for the first (silver) pin, enclosing 10c to defray mailing cost. Pins then will be mailed to them immediately. Later, gold pins will be available to those who send in twelve sets of correct plane silhouette answers, qualifying them as full-fledged Sky Scouts!

Anyone can become a Sky Scout, even though he has missed previous silhouette installments. These silhouettes will be reprinted from time to time, so late entrants can fill in the attached coupons when they appear and send them in to headquarters. The first set of silhouettes will be reprinted in the next issue (June) together with set No. 5.

If you wish to become a Sky Scout, do not wait for the reprints of the old silhouettes. Start now with this lesson, No. 4, then later send in the 1st, 2nd and 3rd sets when they are reprinted. A Scout is eligible for his silver pin as soon as two sets of correct answers have been received.

In a month or two each Scout will receive a list of all other Scouts in his community so they all can arrange a meeting and form a Sky Scout Unit. When a Unit has been formed and a "leader" elected by popular vote, notification should be sent to Scout headquarters, together with the name of the Unit and Leader. An official number then will be assigned to the Unit, and

(Continued on page 48)

THE NAKAJIMA 96 TORPEDO BOMBER

Plans on Page at Left

THE Nakajima 96 is a three place torpedo bomber powered by a 950 h.p. Mitsubishi Kinsei engine, which is a copy of the Wright Cyclone. The craft is patterned after the Fokker C 11 W torpedo carrier and in dimensions compares almost identical to the English Vildebeeste.

It is of metal frame construction with welded tube fuselage. The framework is covered with fabric. Following standard naval aircraft practice, the wings are designed to fold aft for stowage aboard aircraft carriers.

In reference to armament, little is known at this time; however it is apparent that a flexible machine gun is mounted on the aftmost cockpit. Possibly, two more fixed guns are also carried aboard, synchronized to fire through the propeller. An 1,800 lb. torpedo is carried beneath the fuselage, while as an alternative, bombs may be carried under the wings.

The dimensions are as follows:

Span, 49 ft. 5 in.; length, 38 ft. 7 in.; height, 16 ft. 1 in.; wing area, 732 sq. ft.

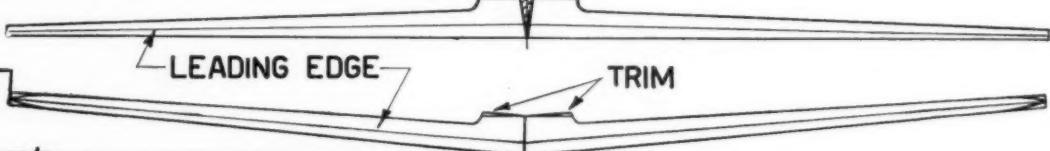
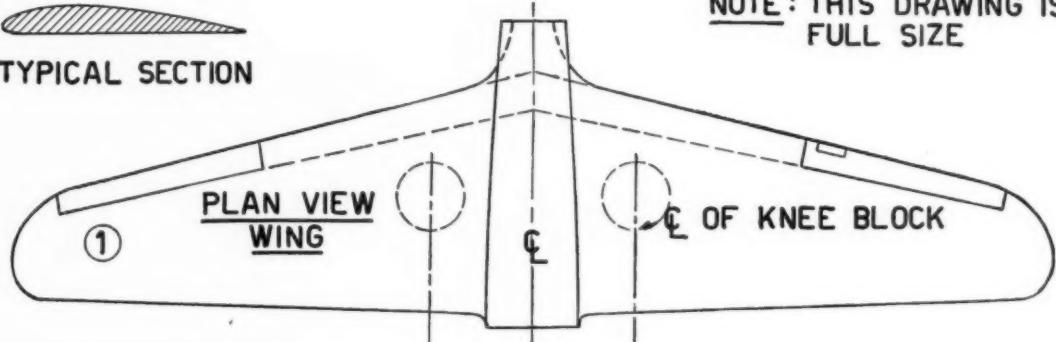
Weights: Empty, 4,620 lbs.; loaded, 8,240 lbs.

Performance: Max. speed, 158 m.p.h. at 6,560 ft.; range, 620 miles at 131 m.p.h.; service ceiling, 17,100 ft.

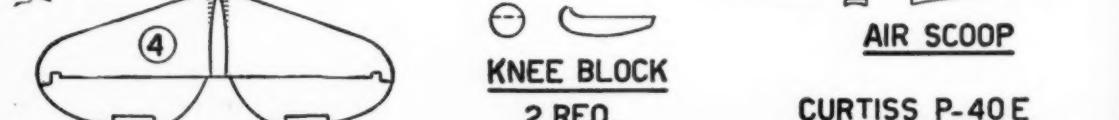
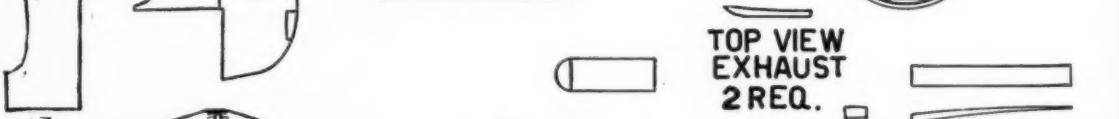
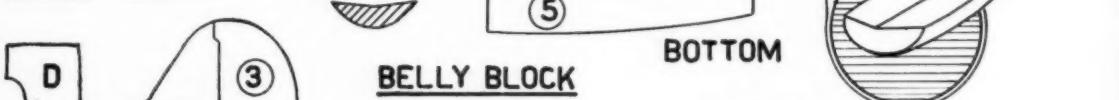
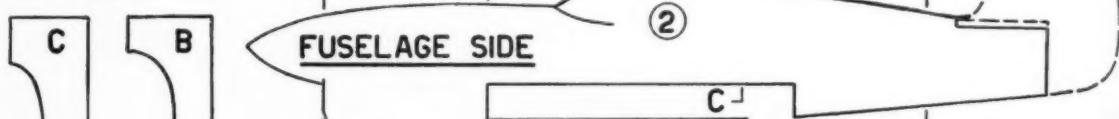
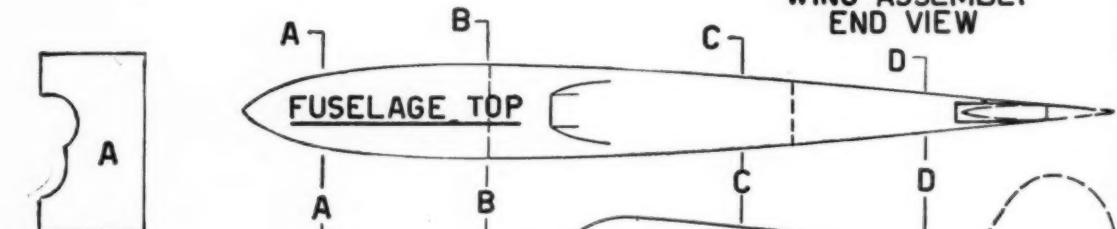
Torpedo bombers such as the Nakajima 96 were among the foremost successfully used Nipponese aircraft used against Pearl Harbor.

NOTE : THIS DRAWING IS
FULL SIZE

TYPICAL SECTION



DIHEDRAL GAUGE



RUDDER & ELEVATORS

CURTISS P-40 E
IDENTIFICATION MODEL

MODEL AIRPLANE NEWS

MODELING PLANES FOR UNCLE SAM

**Build this solid scale
model of the Curtiss
P-40E pursuit and
help win the war**

by **NICK LIMBER**

THE nation's model builders have for the first time been given the opportunity to participate in our war efforts, and in a manner which will be of direct benefit to the country's fighting forces. In order to train the thousands of airmen, gunners, spotters and other technicians of the Air Force and the various defense agency branches in the art of identification, range finding and other tactical problems associated with aerial warfare, a call has been issued for 500,000 scale models of present-day combat aircraft of all warring nations.

Model builders, through the nation's public school system, have been asked to cooperate with the Government by constructing miniature models of the airplanes requested by the authorities.

Construction of these models will not differ in any way from methods practiced by all builders for many years, excepting in the material used and perhaps the method of finishing.

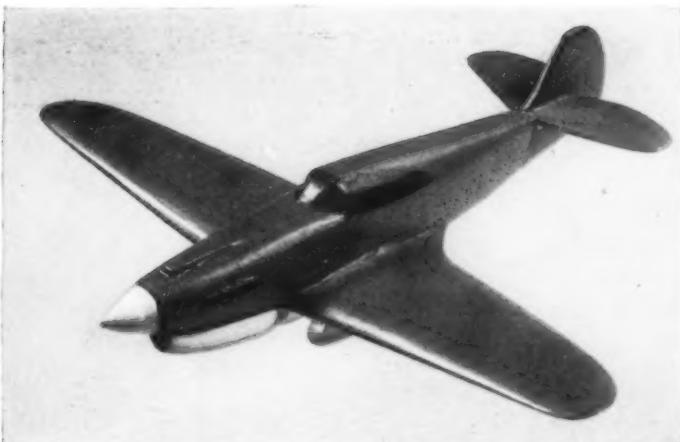
Supplementing the official drawings and data issued by the Bureau of Aeronautics of the Navy Department (see page 31), MODEL AIRPLANE NEWS is publishing drawings and instructions of these models for the benefit of those wishing to cooperate in this work but who have not been able to obtain official plans and data.

Prime requisite in the construction of these models is true scale accuracy and the ability of the model to take "abuse." For this reason, the models must not be constructed of balsa wood. White pine, ash, gum, poplar or similar wood has been officially specified by the Government.

The first modeling project is the famous Curtiss P-40E pursuit plane that already has shown its mettle.

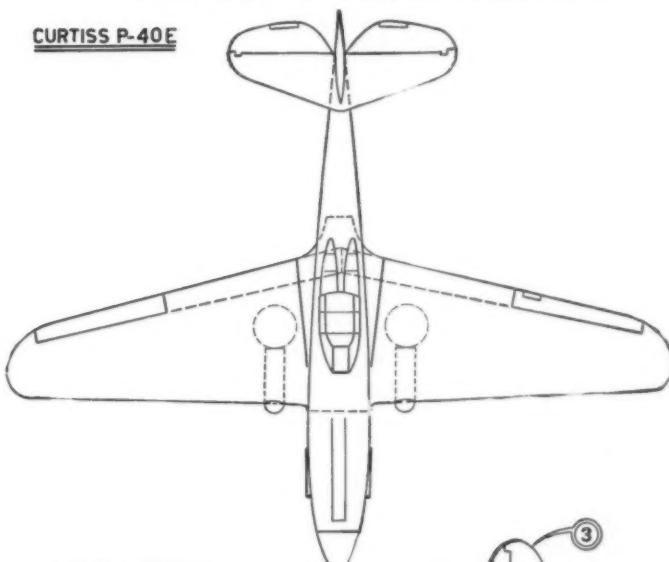
Start by carving the fuselage from a block measuring $3\frac{1}{4}'' \times 1\frac{1}{4}'' \times 5\frac{1}{4}''$. First trace or scribe the top and side views of the fuselage on the block of wood. Care

(Continued on page 57)

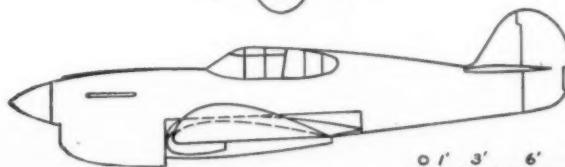
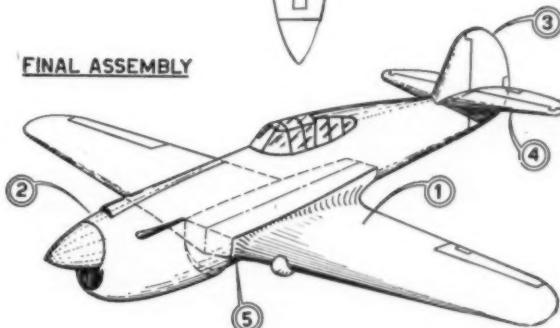


Finished model in regulation Army colors. Models for the Navy program should be painted dull black all over

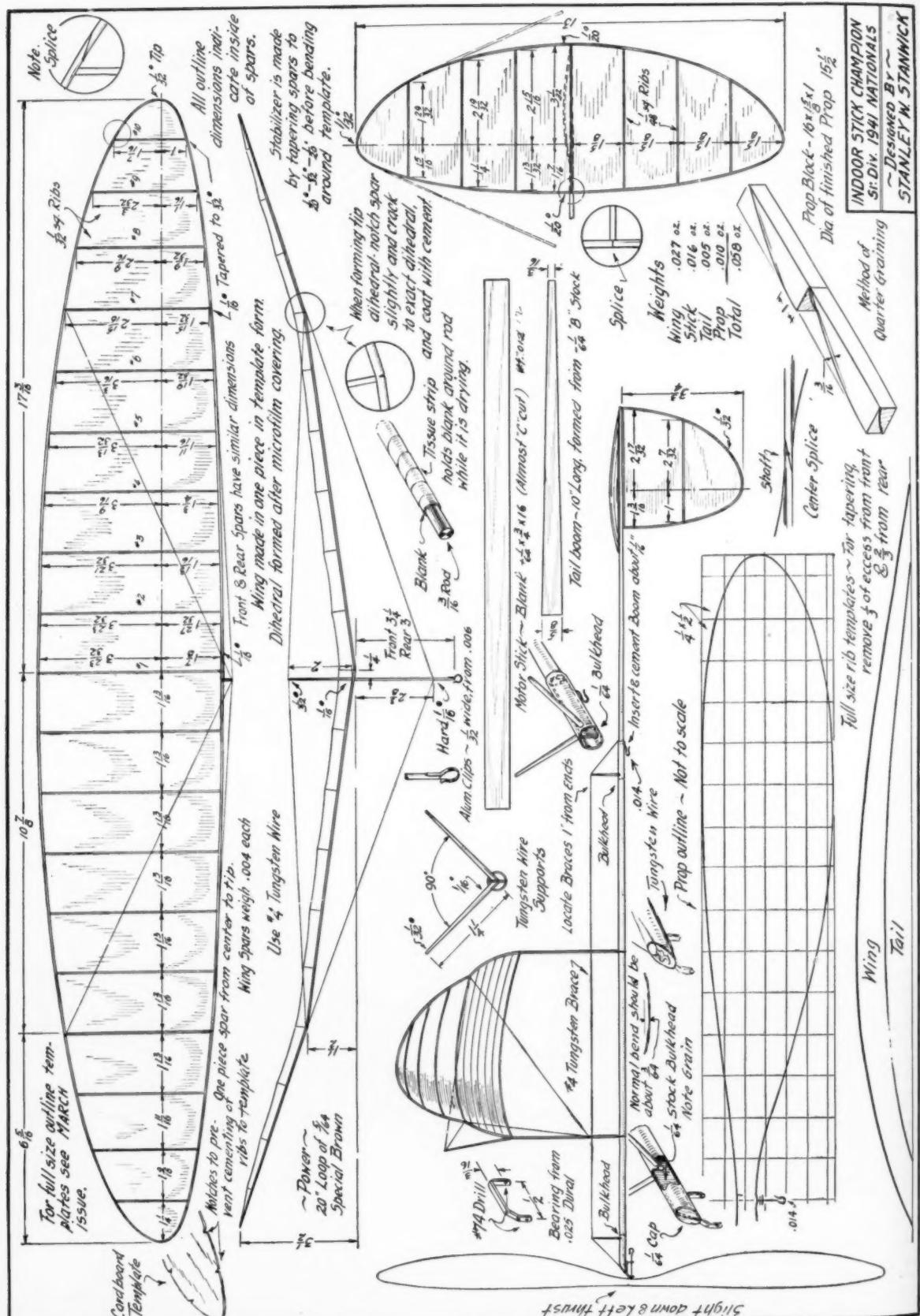
CURTISS P-40E



FINAL ASSEMBLY



0' 1' 3' 6' 9' 12'



NATIONALS INDOOR “STICK” WINNER

How you can build the model that captured both the Stout Indoor and Burgess Trophies at the 1941 Nationals

BUILT in the Fall of 1940, this model has won many prizes including the famed Stout Indoor trophy and the Burgess trophy, at the 1941 Nationals. Its best duration to date is 24 min. 46 sec.

The general design is a typical Boston layout employing tungsten wire bracing for the wing and motor stick to reduce weight yet retain a certain amount of rigidity. A model of similar design, built and flown by Hewitt Philips of Boston, also won the Stout trophy several years before this model did the trick. It is therefore evident that this design has enough background to recommend it to others.

Anyone who has built one or two indoor models before should experience no difficulty in duplicating the job, although some may be using the tungsten wire for the first time. If you carefully select the best grade of indoor balsa and exercise patience during the construction period your ship will stand up against the best of them.

CONSTRUCTION OF SURFACES—
The wing and tail construction was de-

scribed in detail in the March issue of MODEL AIRPLANE NEWS featuring the Winning Indoor Fuselage. Since both wings are identical, the full size templates shown in the March issue can be used for the Stick model. Those who do not have the March copy, may make a full size outline template of the wing and tail from cardboard. Cut and shape spars to dimensions given. Slice ribs from quartergrained balsa, using the full size rib template as guide. (Cement rib drawing on aluminum sheet, and cut to outline using it as guide for razor.) Moisten spars and hold them against template with pins. After drying, insert the ribs. Put the assembly away to allow cement and spars to set for several hours. Use same procedure for stabilizer and rudder. Cover in one piece, form dihedral, and take up microfilm slack by passing over heat.

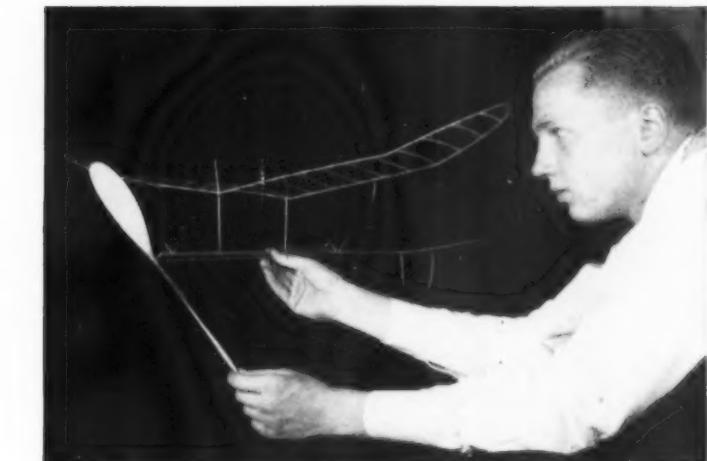
MOTOR STICK—Use quartergrained (or close as possible) balsa and cut to correct size. Use very fine sandpaper to bring it to given weight. Soak it in hot water for about half hour, in the meantime making

four tungsten wire supports, 1-1/4" long and tapering from 1/16" round to 1/32" round. Also make the dural bearing and rear hook.

Motor stick tube is made by bending it around a 3/16" metal drill rod and holding it in place with tissue tape. Place "works" in a slightly heated oven and bake for about ten minutes, making sure that balsa does not become scorched. Remove tissue and rod. Cement the seam very carefully. After the cement has set, sand with very fine sandpaper. Insert the 1/64 sheet bulkheads at the ends for additional strength. Mark holes for tungsten wire braces 1" from ends. Note that they are set at 90° angle and anchored to the bulkheads. Angle the front end and cap it with 1/64th, and cement the bearing and rear hook. The stick is now ready for tungsten bracing.

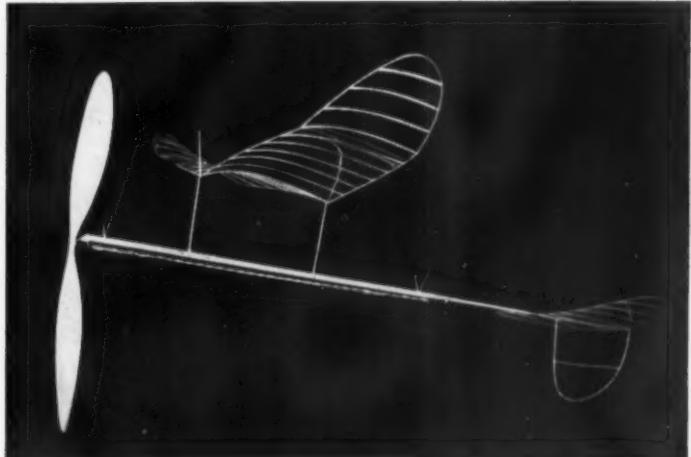
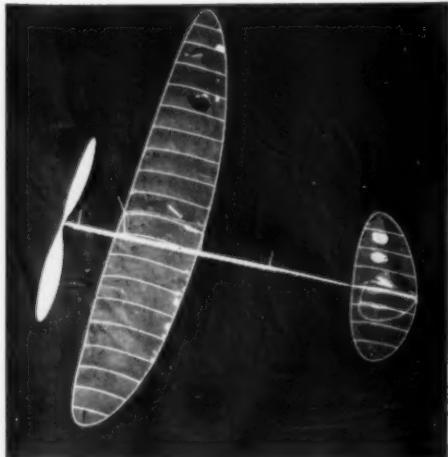
In bracing with tungsten wire, first secure end of the wire to the cap in the front of the stick by having several zig zags formed over the cap to allow good cement-

(Continued on page 44)



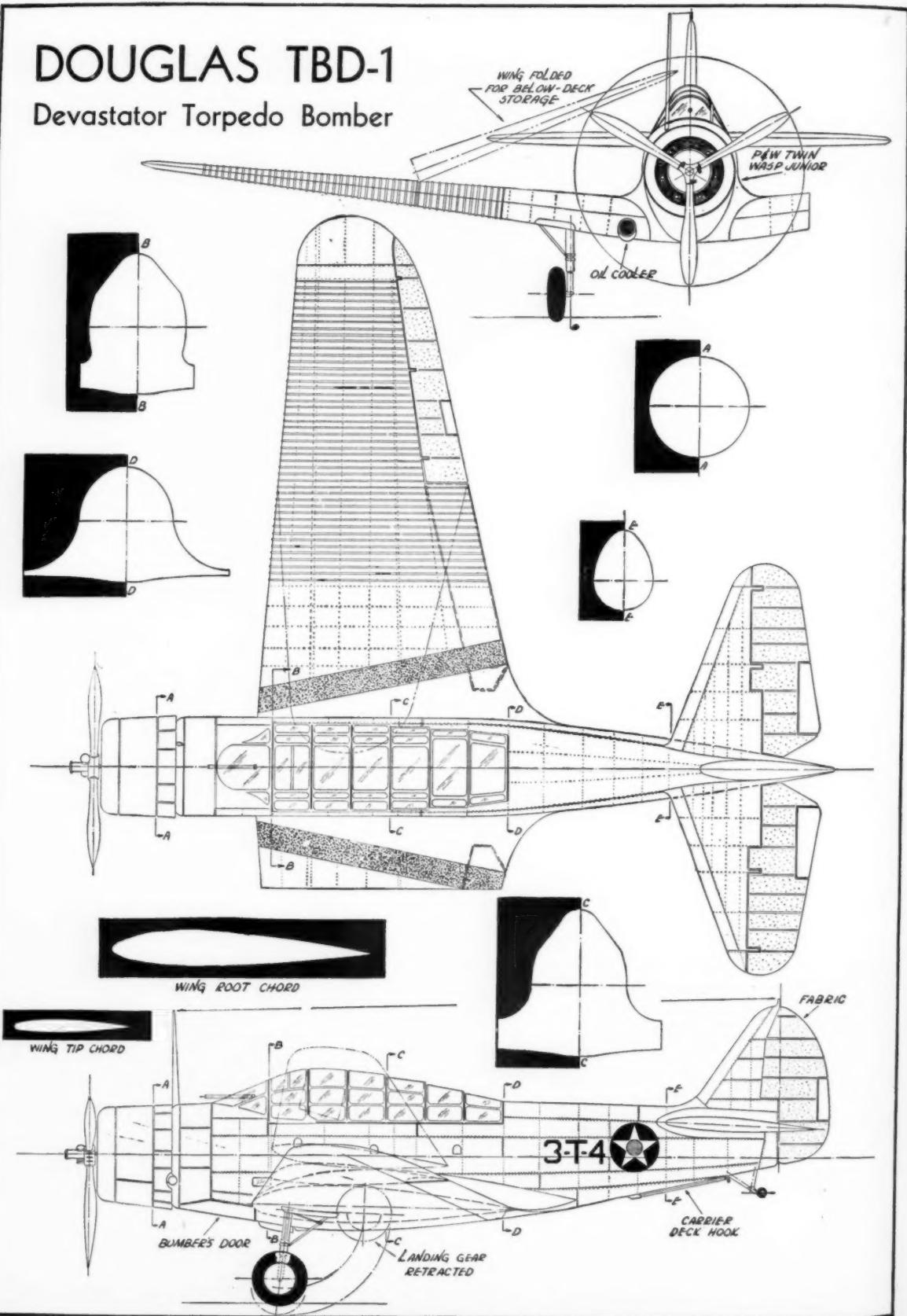
by **STANLEY W. STANWICK**

Of simple structure, the secret of its high performance lies in excellent proportions and light weight



DOUGLAS TBD-1

Devastator Torpedo Bomber





AXIS DEVASTATOR

The plane on the cover

by ROBERT McLAREN

ALTHOUGH the design and construction of floating powder charges, later to become known as torpedoes, were undertaken during the Civil War, it was not until 1916 that the deadly capsules proved their worth. The dread German U-boats sank hundreds of thousands of tons of Allied shipping with this treacherous device during the first World War. Late in 1918 Rear Admiral Ralph Earle, United States Navy, began thinking in terms of combining the torpedo's enormous destructive power with that load-carrying ability so highly praised in the newly perfected military airplane. In collaboration with Henry Woodhouse, a pioneer airman, Admiral Earle worked out fittings and launching apparatus to be mounted on a seaplane.

The First Yale Unit, a group of anxious young Yale University students undertaking flight training with the Navy, had been formed including in its ranks Lieutenant Artemus L. Gates and Lieutenant Robert A. Lovett, now Assistant Secretary for Air in the Navy and War Departments, respectively. After winning their wings, and while awaiting orders to board ship for France, this unit willingly agreed to co-operate with Admiral Earle in his experiments. A ship was fitted out and practice launchings made with dummies while the E. W. Bliss company was completing the world's first aircraft torpedo. The missile was to weigh 200 pounds and Woodhouse had agreed to pay \$2,000 dollars for its construction.

Suddenly, things went awry due to several unforeseen events: Admiral William S. Sims, then Commander of the Fleet, cabled from London that the British had just ordered 150 torpedo planes capable of carrying the regulation 1,000 submarine torpedo; the First Yale Unit was mustered

into the Navy and Woodhouse was relieved of the \$2,000 payment.

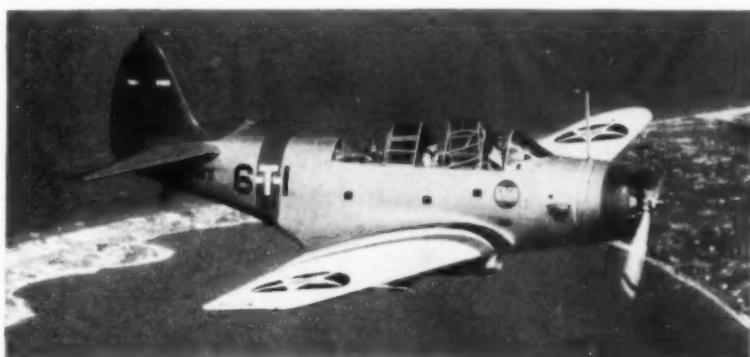
The British order was not filled and the Armistice on November 11, 1918 came without a torpedoplane having taken the air in combat. The British, to cover their failure, opened debates in Parliament to outlaw use of the torpedoplane on the grounds that it was an inhumane and unfair apparatus. In May 1919 the Washington Naval Disarmament Conference was called and discussions were held on the subject of limiting naval construction. Obviously, it seemed futile to limit construction of submarines, destroyers and cruisers; all torpedo-carrying vessels; and not the torpedoplane. When it became evident that the United States was not in accord with the move afoot to outlaw this new weapon, the British discontinued their arguments and torpedoplanes were not mentioned in the vast and wordy treaty.

Admiral Earle, heartened by this action as well as the enthusiastic support of the

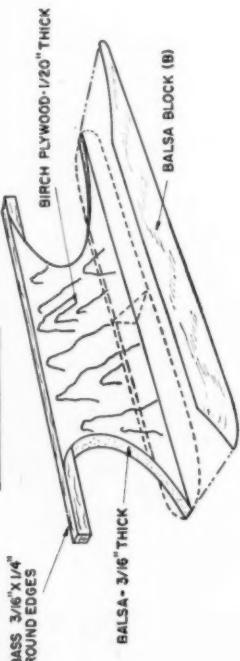
Assistant-Secretary of the Navy, one Franklin D. Roosevelt, renewed his experiments and the U. S. Navy's first torpedoplane was tried out in May, 1919 over the Delaware River, near the Naval Aircraft Factory at Philadelphia. After its initial successes this ship was flown to Hampton Roads which has, ever since, been the center of the Navy's torpedoplane experiments.

The early 'twenties found the United States hard at work on development of the type and far, far ahead of the rest of the world. After the 1923 successes of the World Cruisers, the name of youthful Donald Douglas entered the aviation picture and has stood at the very top ever since. The DWC (Round-the-World Cruiser) was a development of an earlier model, the DT-1 (Douglas Torpedoplane Model One), from all available data, was the world's first torpedoplane. The ship was powered by a Liberty 12 of 400 horsepower. It had a wing span of 50 feet and a length of 37 feet 7 1/2 inches, considerable size for its day. It was a biplane seaplane carrying a crew of two which was later enlarged to three. It had a top speed of 100 m.p.h. and could climb to 6,500 ft. with a 1,000 lb. torpedo installed.

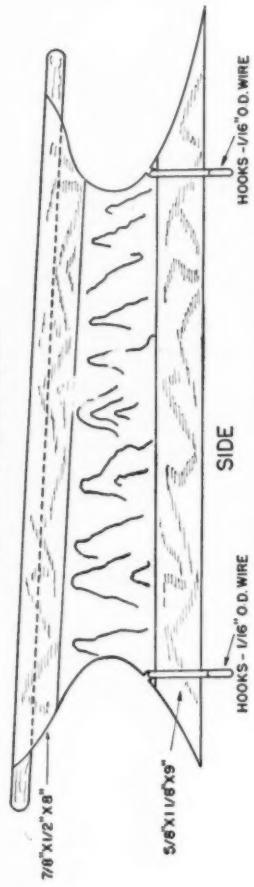
Although this performance was considered remarkable at the time, it soon became evident that greater power would be required to lift the giant torpedoes. The
(Continued on page 44)



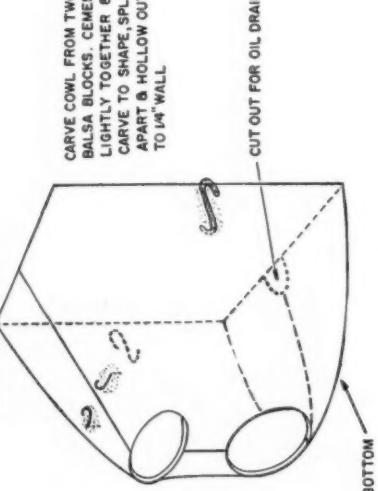
PYLON DETAIL



PYLON SCALE - $1/2'' = 1''$



COWL DETAIL



REAR SPAR

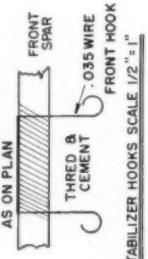
.035 WIRE

NOTE
MAKE TWO OF EACH
FASTEN ONE TO SPAR,
CEMENT & BIND WELL.
CEMENT OTHER TO BODY
AS ON PLAN

CUT OUT FOR OIL DRAIN

FRONT SPAR

.035 WIRE



BALSA - (B)

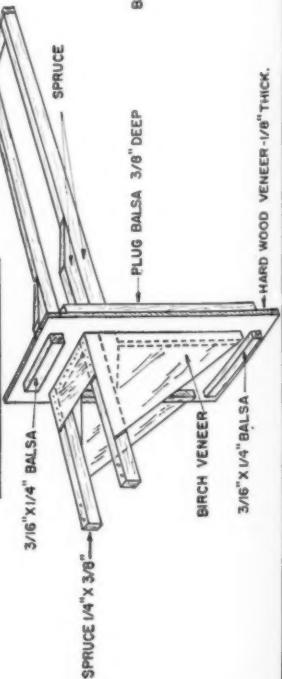
BALSA BLOCK

FRONT SPAR

.035 WIRE

FRONT HOOK

ENGINE MOUNT DETAIL



MODEL DESIGNING SIMPLIFIED

Designing the wing pylon and fuselage building procedure

by CHARLES HAMPSON GRANT

ARTICLE 18

THE procedure of designing a gas model follows certain definite steps. First, the aerodynamic proportions of the plane are determined. Second, a single line drawing of the plane, embodying these factors, is made. Third, make a general layout drawing including all structural parts. Fourth, full size detail drawings, including assembly and parts drawing, are then laid out. Fifth, from this the model is constructed.

Thus far this series of articles has described the procedure in detail, including the designing of fuselage and wing and the method of constructing them.

The next problem is to design the pylon, laying out a detail full scale drawing of it as we proceed. Views on the drawing should include a top, side and end view, as well as full scale layouts of the parts composing them. Original specifications call for a pylon to rest on the fuselage top, to the upper part of which the wing is to be attached by rubber bands, making a flexible mount. Wing and pylon must be movable backward and forward to give longitudinal balance adjustment. Consequently the design must take these limiting factors into consideration.

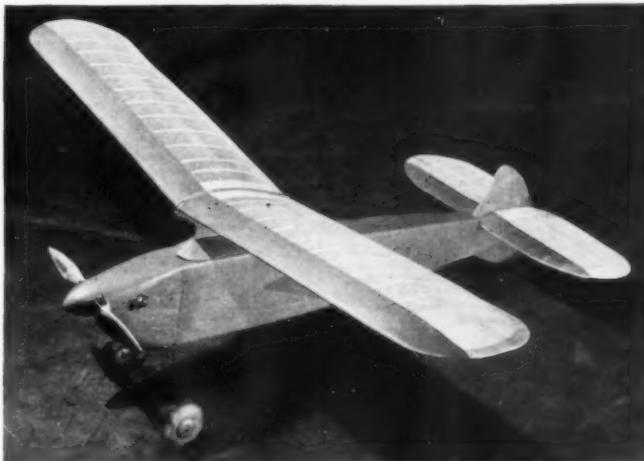
Now let us see how we can work out this problem. First of all, it should be as light as possible yet strong enough to take the buffeting and wind gusts that may force up one wing tip suddenly. And it must be movable—it cannot be fastened to the fuselage bulkheads.

An excellent form of pylon is one with a broad base covering the top of the fuselage, a bed at the top, wide enough to create a proper base for the wing and an intermediate connecting vertical member. Two Y yokes spanning the base of the pylon and extending downward on either side of the fuselage restrict the side motion of the pylon and afford a means of holding it tight by rubber bands. These pass over the ends of the wire bent into hooks and around the belly of the fuselage, hooking to the wire on the opposite side. Two are sufficient, one fore and aft.

The center vertical member must be strong and rigid. An excellent construction is provided by cementing a sheet of $1/32$ " birch veneer on each side of $3/16$ " balsa. At the top of the balsa core, between the veneer, a longitudinal hardwood strip should be inserted, its ends extending beyond the veneer, fore and aft of the wing to form hooks for the rubber wing strap. This piece can be made of bass wood $3/16$ " x $1/4$ ".

A solid rigid piece now can be formed by cementing two pylon blocks, B on the drawing; one on either side of the base of the veneer and pylon upright. Bevel-

Copyright 1942 by Charles Hampson Grant.



The completed model—ready to win contests

ling the outer edges reduces the head resistance yet leaves sufficient gluing area to the upright and a sufficiently broad base to give strength and rigidity.

Two balsa pieces should also be cemented to the top of each side of the vertical member to form the wing bed. Its upper surface should be slightly bevelled to conform to the wing dihedral. It is best to slant them slightly more than the dihedral to make sure that their outer edges contact the wing. Y yokes may be inserted through the center upright fore and aft as shown on the drawing, hooks to be bent at their lower ends. All sharp edges and the nose and trailing edge of the pylon should be rounded to reduce drag. When the general design has been laid out make full scale detail drawings from which to build this unit.

The cowl is the next consideration, taking the outline shown on the original layout drawing. Making it in two parts allows it to be detached when required. The two halves are to be hollowed out, leaving a wall $1/4$ " to $3/16$ " thick. Hooks across the top and bottom close to the nose will serve as anchors for rubber bands to hold the halves together. Hooks at the mid-point of each side will allow anchorage for rubber bands to fasten the whole unit to the fuselage nose.

To hold cowling rigidly to the firewall and to keep it from slipping sideways, upward or downward, cowl support blocks should be cemented to the front face of the firewall top and bottom. These are shown on the drawing of firewall bulkhead section A and on engine mount detail isometric. The top of the upper block should be below the upper edge of the firewall a distance equal to the thickness of the cowl at this point; the lower cowl block should be located in similar manner

at the bottom. Thus when the cowl is pressed tightly to the firewall these blocks contact the inner surface of the cowl tightly. Their length should be just equal to the width of the cowl inner opening, thus preventing side-play. Rubber bands around the side hooks bind the cowl tightly against the firewall.

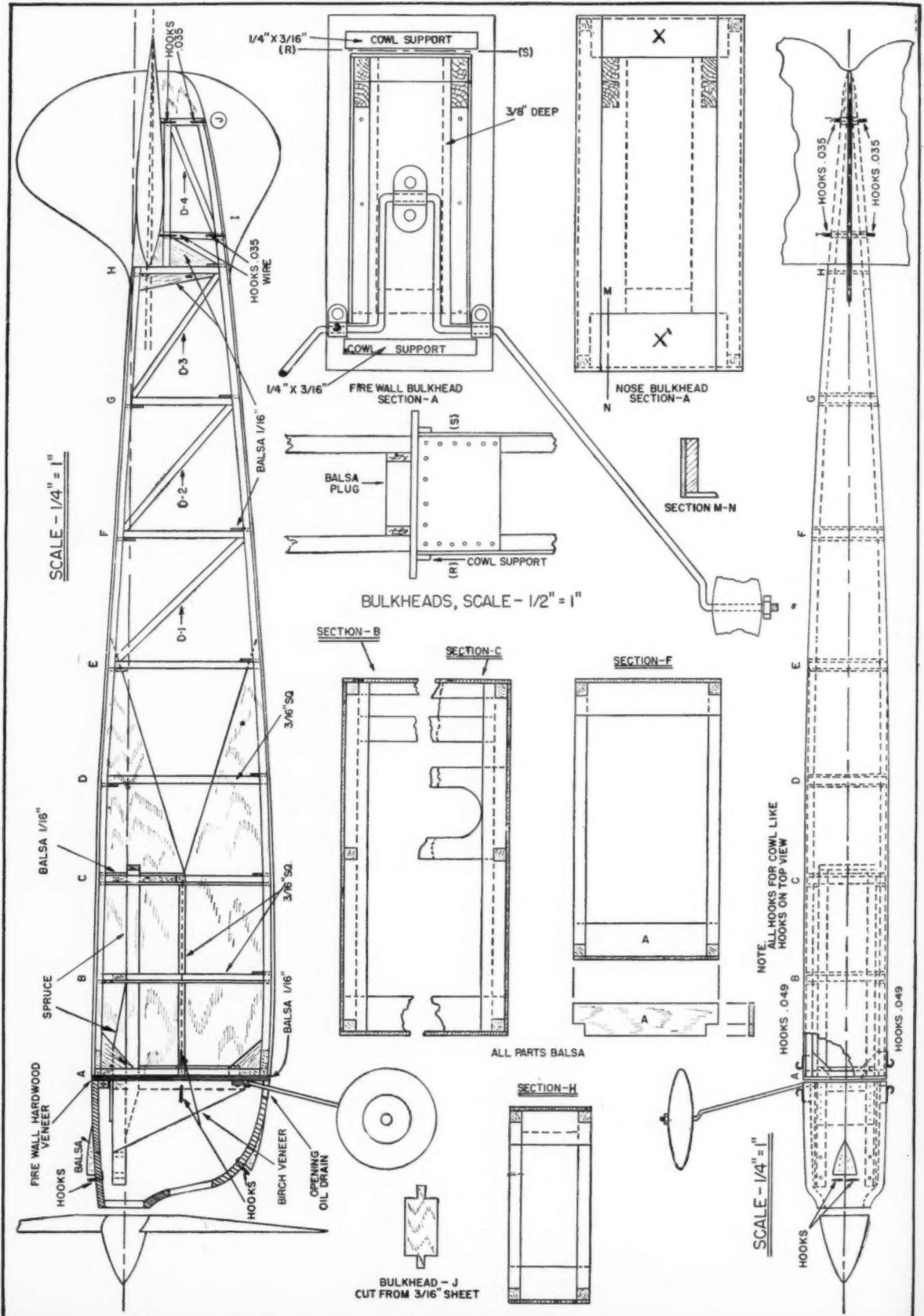
Now all details have been designed and if you have followed the correct procedure you will have detailed layout drawings of the entire ship. The plane may be built from these plans or, if you desire, full scale drawings including parts and assembly can be made; sometimes this makes building simpler. These drawings should include full size layouts of fuselage, side and top view, also parts drawing where necessary, including full size top, side and front view of the engine mount. Then make similar drawings for the wing, stabilizer and pylon. In the last issue the construction of the wing and stabilizer was described.

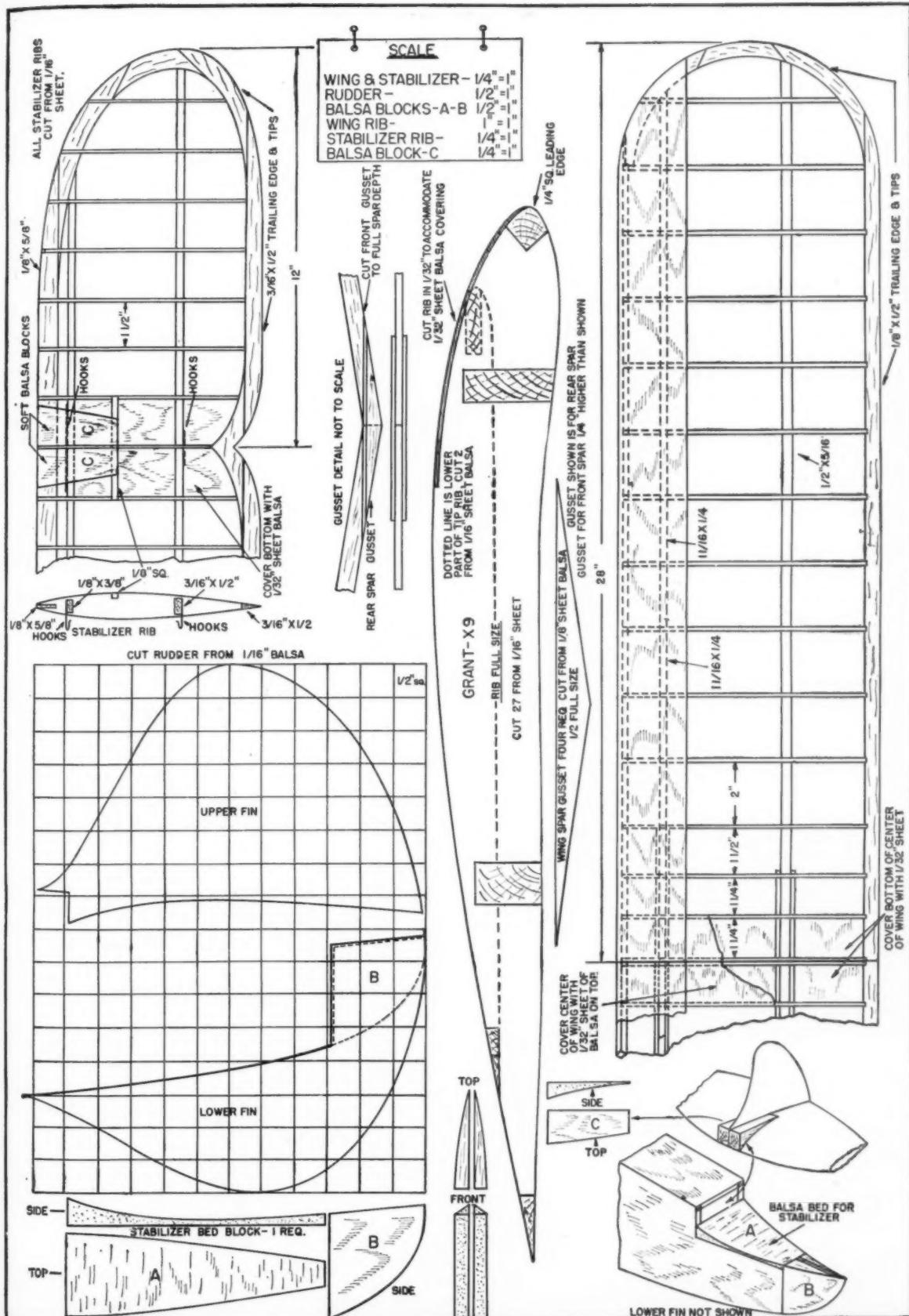
Fuselage

The simplest procedure is to lay longerons and struts forming the sides directly over the full size drawing, holding them in place with pins on both sides of longerons; not pressed through the longerons; the latter procedure will weaken them. Cement parts together as they are put into place. It is advisable to stretch wax paper over the layout drawing before assembly; this prevents the cement and parts from sticking to the drawing.

When one side is made and is dry the second side may be constructed directly over it. When this is dry the two are cut apart with a razor-blade.

While the sides are drying, parts for bulkheads B and C may be cut out and
(Continued on page 62)





ACADEMY OF MODEL AERONAUTICS

(A Division of the National Aeronautic Association)

Official Model Airplane News

Navy Asks for 500,000 Scale Model Planes

SECRETARY of the Navy Frank Knox has asked model airplane builders in schools throughout the country for 500,000 aircraft models for training military personnel in aircraft recognition and range estimation in gunnery practice. These models likewise will be important in the training of civilians in aircraft recognition, an essential element in civilian defense.

The Navy's Bureau of Aeronautics is preparing plans and specifications for the model planes and is furnishing them to the U. S. Office of Education, who will distribute them to state commissioners of education, who in turn, will send them to schools in each state.

Aeromodeling clubs can do much to speed and assist in the model building program. It is their patriotic duty to be of all possible service. Go to the schools, advise them of the program, and urge school representatives to ask for the complete kits of authentic plans, building instructions, teachers' manual and wall charts which are available through the state commissioner of education. As soon as the first quota is completed, additional sets of the fifty required models should be built for local air spotters and for community displays, to acquaint everyone, young and old, with American, Allied, and enemy fighting aircraft. If you prefer, you can build your first model, the Curtiss P-40D pursuit from the plans on pages 20-21. Another will appear next month.

Models Must Pass Inspection

All models built for the Navy and civilian spotters must be to the same scale (size). Otherwise they are of little value and cannot be accepted by the Navy. Each school undertaking the building project will be required to set up a technical committee to inspect all the models constructed. Thus, if model clubs cooperate with the schools in an outside building program, the models must be released to the Navy through the schools and the inspection committee. At the outset, no plans will be available other than through the schools, and publications securing plans from the schools should stress the point that the models must be made to the exact size required by the Navy.

The models will be made on a precise scale of 1 to 72—an inch on the model representing 6 feet on the actual airplane. The same proportion holds true as to distance; a model seen at 35 feet is identical with the true airplane seen at just under half a mile. Studying the models through the standard ring sight used on aerial gun mounts becomes invaluable training for the cadet flyer, teaching him not only type and identification, but range. Only three dimensional models can serve properly for all these functions.

The planes must be perfect in every detail. To students completing stated quantities of models which pass inspection, the Bureau of Aeronautics and the Office of Education will present certificates in recognition of the importance of the work. Approved models will be sent to aviation units, ashore and afloat.

Following are the model plane quotas assigned to the states and territories on the basis of numbers of students enrolled in both public and private secondary schools:

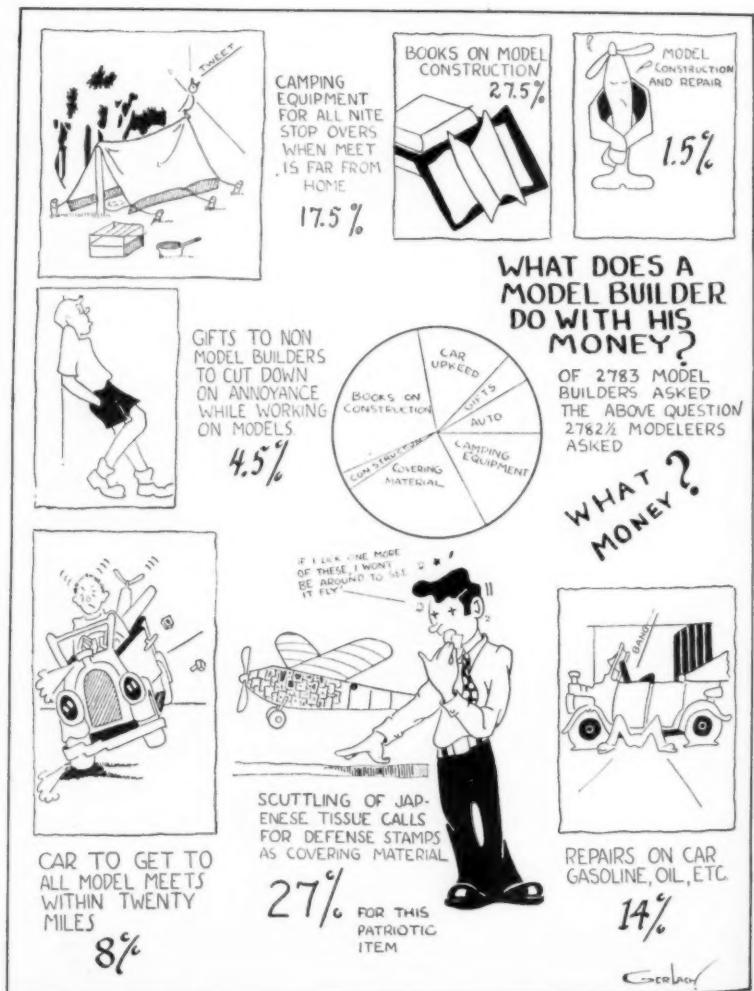
Quota assigned Alabama 7,500; Arizona 1,500; Arkansas 5,000; California 30,000; Colorado 4,500; Connecticut 7,000; Delaware 1,000; Florida 5,500; Georgia 9,000; Idaho 2,400; Illinois 30,000; Indiana 15,000; Iowa 10,000; Kansas 8,000; Kentucky 7,000; Louisiana 22,000; Minnesota 11,000; Mississippi 5,000; Missouri 15,000; Mon-

tana 2,000; Nebraska 6,000; Nevada 500; New Hampshire 2,000; New Jersey 17,000; New Mexico 1,500; New York 60,000; North Carolina 15,000; North Dakota 2,500; Ohio 30,000; Oklahoma 9,000; Oregon 4,000; Pennsylvania 45,000; Rhode Island 2,500; South Carolina 6,000; Vermont 1,000; Virginia 8,000; Washington 7,500; West Virginia 6,500; Wisconsin 12,000; Wyoming 1,000; District of Columbia 2,500; Alaska 100; Canal Zone 100; Hawaii 2,000; Puerto Rico 1,000; Virgin Islands 100. Total = 508,300.

Cost to Schools

Plans, specifications, and instructional outlines for all different models will be supplied by the Bureau of Aeronautics of the Navy, and distributed through the U. S. Office of Education free of charge.

Plans will be sent to state education de-



partments and from these to each school, where they will be available to manual training and aviation teachers.

All construction materials are to be supplied locally and will consist of soft woods, glue, and paint.

Local cooperating groups, such as civic and service clubs, parent-teacher associations, women's clubs, N.A.A. chapters, ex-service men's organizations and auxiliaries, and others, may be interested enough in the project to provide for the small expense incurred.

Accepted models are to be assembled in sets consisting of one of each different model, packed (at local expense), and labeled. Detailed instructions and procedure for inspection, packing, labeling, and shipping will be furnished with the plans and specifications. Shipments will be made to Naval Reserve aviation bases and other military aviation training centers. Costs of transportation will be paid at the receiving centers.

Since all work is to be done as a part of the school program, no additional costs for instruction or other incidentals should be necessary.

In view of the emergency, these scale models are requested to meet an immediate need. *Time is an important element.*

Let's go, aeromodeling America! Contact your local schools immediately, show them this article. Urge them to request materials from their state commissioner of education.

A. M. A. Journal

With the consolidation of Air Youth "Horizons" and "Model Aviation" space limitations will probably result in fewer opportunities to present advanced technical aeromodeling material. For that reason the Academy's quarterly "Journal" will again be issued containing scientific papers and reports.

Available to A.M.A. leader members at no charge, the initial issue of the revived "Journal" is expected to go to press soon. Contributions should be mailed in promptly to headquarters.

Air Youth Director

Albert L. Lewis has been appointed Acting Director of the N.A.A. Air Youth Division by the Air Youth Board. Kendall K. Hoyt, Manager of N.A.A., has been acting in this capacity pending the first meeting of the Board in Washington this week.

Serving in recent years as Executive Director of the N.A.A. Academy of Model Aeronautics, Mr. Lewis is both a skilled aeromodeler and an experienced director of large-scale youth activities. It was in no small measure due to his efforts that the advancement of junior aviation in this country, with almost no public encouragement and very limited support from private sources, was able to continue its headway and enlist the many thousands of young people through the influence of the Academy of Model Aeronautics.

The Air Youth Board, meeting under the chairmanship of Dr. George W. Lewis, also approved plans for a club and school program of aviation training. In expressing his appreciation for the appointment, Mr. Lewis said that the same system which had built up the Academy could be

followed in Air Youth activities. Basically, this is to focus attention on the local programs and provide as much assistance as possible instead of attempting to run all activities from the headquarters office. He indicated that as long as there are enthusiastic and sincere leaders like the Browns of Boston, the Polks of New York, the Thomases and Voglers of Pittsburgh, the Meurises of Chicago, the Sommers of St. Louis, the Alexanders of Akron, the Burgdorfs of Texas, the Thomases of Florida, and the hundreds of other qualified and capable leaders ready to do everything possible to aid youth in aviation, the Air Youth program of N.A.A. cannot help but be an outstanding success.

Schools Offer \$12,000 in Scholarships

The Second National Air Youth Scholarship competition offering free scholarships to thirteen outstanding aviation schools is open to high school graduates showing "promise of success in an aviation career." The closing date for applications has been extended to May 15.

The scholarships total more than \$12,000 in value, and the following schools offer them to the winners of the competition: Academy of Aeronautics, La Guardia Field, New York; Aero Industries Technical Institute, Los Angeles, California; Aviation Institute of Technology, Long Island City, New York; Boeing School of Aeronautics, Los Angeles, California; Dallas Aviation School, Love Field, Dallas, Texas; Delehanty Institute, New York City; Embry-Riddle School of Aviation, Miami, Florida; International Correspondence Schools, Scranton, Pennsylvania; Luscombe School of Aeronautics, Mercer Airport, West Trenton, New Jersey; and Spartan School of Aeronautics, Tulsa, Oklahoma.

Top award in the competition is a two year scholarship, valued at \$2500, with a possible cash allowance for living expenses. Others provide training in aircraft mechanics, airlines maintenance and engine mechanics at recognized private schools on the East and West Coasts, and in Texas and Oklahoma. All scholarships are for the school terms beginning in the fall of 1942 or the spring of 1943.

"These scholarships are offered in recognition of the importance of the part that youth is playing in the national aviation program," says Major Lester D. Gardner, chairman of the Committee of Awards. "The need for skilled workers in the aviation industry is urgent and will become more so as America's Defense program is expanded. Young men who have demonstrated ability as expert model airplane builders are in demand, both in the industry and in the governmental services. Air Youth wants to give encouragement and assistance to promising boys, who might otherwise not be able to obtain this aviation training."

Any boy who is a high school graduate, or will be by June, 1942, and is a citizen of the United States, may enter the Air Youth Contest, whether he lives in the smallest town or the largest city.

National Contest Dates Announced

The dates of the 1942 National Model Airplane Championships, which will be held in Chicago under the sponsorship of

New SENSATHERM

FLIES AS A HIGH WING
FLIES AS A LOW WING

2-in-1
Unique, dual-contest model designed.

Converts
INTO EITHER TYPE
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44" WING SPAN

COMPLETE WITH
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A single building project gives you SEN-SATHERM—with two distinct flying characteristics: A High-wing—or low wing! Changeover in 10 seconds—or less! A magnificent model! In countless demonstrations, including contests! The complete kit includes many finished parts: Rudder, New type wing tips, landing gear, trailing edges, Lifting Stabilizer and ribs. Tapered & Drilled Nose Plug (rock hard!) Plenty of balsa, tissue and cement.

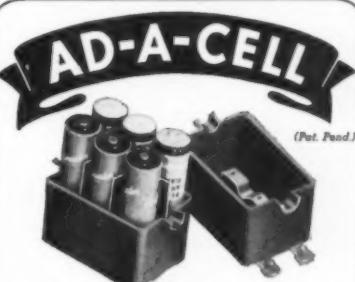
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Class 'C' Endurance \$1.25 ea.
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31 minutes at
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23 Min. at Cherry Hill
NEW 1942
PRICE 5c
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BEST by TEST Model Co.
175 (P.S.) Main St., Ridgefield Park, N. J.
DEALERS: Write for details or send
orders at regular discount.



Ad-A-Cell is manufactured from Shatter-proof RED Tenite, noted for lightness and strength. Special features of Ad-A-Cell are: Guaranteed to cut battery costs as much as 60%. Lightest weight battery pack on the market... Holds from 2 to 6 cells... Solderless Terminals... Weight can be varied, and many other features.

Go to your favorite dealer and get your Ad-A-Cell today, or send \$1.25 to the address below and we'll shoot your Ad-A-Cell on its way to you.

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MODEL BUILDERS! UNCLE SAM NEEDS 500,000 MODELS *for identification purposes!*

*Scientific is proud to devote
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Time is important! 500,000 scale models are needed immediately! America is depending on you to turn 'em out! So get busy, fellas . . . start building today! And you can help still further by contacting your local schools, model building clubs, and other organizations, urging them to ask for authentic plans, instructions,

teachers' manual and wall charts which are available through the state commissioner of education! Scientific is proud to devote its manufacturing facilities to meet this emergency! America needs the planes . . . you know how to build 'em . . . we can supply the materials—so let's get together and show Uncle Sam what WE can do!



CURTISS P-42
U. S. Army Pursuit



CURTISS SB2C-1
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Scientific's DEFENSE SERIES

Flying Scale Models
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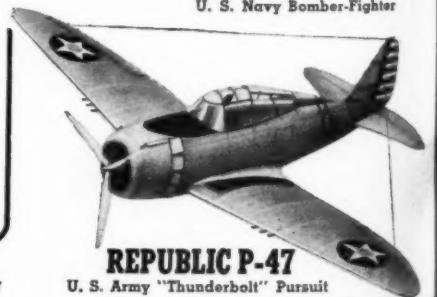
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Wingspan—20½" Length—18"

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ALL OHLLSSON PRICES ARE LESS COIL AND CONDENSER	

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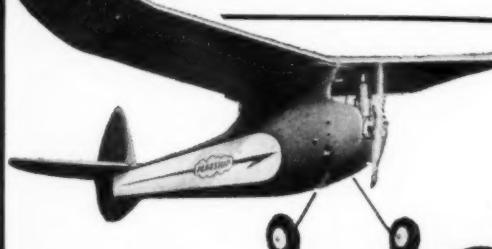
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FLAGSHIP ... Class "C"

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- Wingspan—78"
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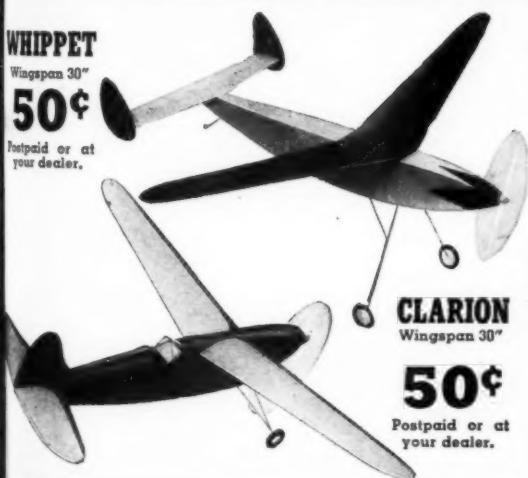
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50¢

Postpaid or at
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CLARION

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25" CHAMPIONS

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DOUBLE Purpose . . . It's a GLIDER AND a FLYER!

*Wingspan 33½" *Length 21½" *Class "B" A.M.A. Rules

Kit is complete with
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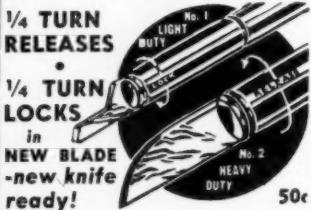
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KEENER KNIVES RENEWABLE blades

Here's the one knife that's sharp forever! New blades only 10¢ each and instantly replaceable. Eight different made-shapes for any kind of cutting or carving. Buy an X-ACTO today at your dealer's . . . or a complete kit of 3 knives and extra blades. Buy it for any cutting job. \$2.00 from \$1.00 to \$7.50.

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X-ACTO
GIVES all HOBBYISTS THE
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For Modern Hobby Store!

Retail salesmen, conversant with gas engines, planes, railroads, boats, race cars. Locations in leading cities creates local opportunities. Please write fully outlining experience, club affiliation (if any), draft status, salary, age. Address "HOB-HY SALES," Box 200, Model Airplane News, 551 Fifth Ave., New York City, N.Y.

BOYS: GET C-Z's
DESCRIBING COMPLETE METAL
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Everybody's talking about the C-Z line of realistic metal covered scale jobs with moulded fuselages . . . you should know more about all 13 models described in our new colored catalog . . . Send only 5¢ for your copy. Here is just a typical kit easy to build and worthwhile having.

LOCKHEED INTERCEPTOR KIT - - - \$2.25

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Dept. M, 3642-43 W. 58th St., Chicago, Ill.

the Chicago Park District and the Chicago Times have been set for July 28 through August 1. Registration will be held on Tuesday, July 28 in the headquarters hotel, which again will be the Sherman.

The contest, the 15th recognized by the N.A.A., will be sanctioned by the Academy of Model Aeronautics. War conditions are expected to make some changes in the events and procedure, but Maurice Roddy, aviation editor of the *Times*, reports officials have expressed the opinion that this is a desirable activity that should be continued and encouraged. Emphasis on scale models of American, Allied, and enemy planes is to be expected with condensed flying events in the rubber powered categories if the rubber situation does not ease off. Full details of the National Meet will be issued when all information is available. Please do not write headquarters regarding the contest until this material is ready for distribution.

Modelers Needed in Civil Defense

In recent discussions with officials of the Office of Civilian Defense, the Academy of Model Aeronautics has been informed that volunteers over sixteen years of age are still needed in most areas as observers.

The Academy pointed out to OCD officials that, because of their general knowledge of aircraft, the ranks of our American model builders offer one of the best sources of personnel for this vital defense service. OCD officials have informed the Academy that model builders who volunteer and are accepted can fulfill a twofold service: first, by giving their own time and service, and second, by releasing other volunteers whose time may be of value in connection with other activities related to National Defense. We know that you want to help, so—

HERE'S WHAT YOU SHOULD DO IMMEDIATELY:

1. *As An Individual:* Apply to the local Defense Council. If you are not sure of its location, inquire at your nearest police or fire station or check with county officials. If you can't find any local Defense Council, write to your Governor and ask him to have the State Defense Council notify you of your nearest unit. Explain your experience in model aviation and offer your services in the aircraft warning service or in any other capacity where you can be of help.

2. *As A Group:* Your model airplane club or group can be of great service in your community in this vital defense work. Call a meeting. Adopt a resolution similar to the following:

By unanimous vote of all members present at this special meeting of the

Meeting

(Name of Club)

at (city, state) on this day of 1942, the following resolution is hereby adopted:

WHEREAS the members of this club feel that they might be of assistance by contributing a portion of their time in the interest of National Defense; and WHEREAS the members of this club have acquired a general knowledge of

aircraft through their activity in model aviation; and

WHEREAS it appears that this general knowledge of aircraft might be of value through serving in the Aircraft Warning Service;

BE IT, THEREFORE, RESOLVED that the members of this club, whose signatures appear below, do hereby offer their services to the State Defense Council both jointly and severally to serve in the Aircraft Warning Service or in any other capacity the Council shall designate.

Upon adoption of the above, or similar resolution, it should be presented by your club president, or senior adviser, to your local representative of the State Defense Council. This service is of vital importance to our country's safety—Volunteer Now!

Chapters Already Volunteer

Among the A.M.A. chapters which have already pledged their services to the defense effort are the Toledo Model Managers, the Atlanta Aero Engineers, and the Cincinnati Albatross Birdmen. Additional responses are expected in the coming weeks.

Advanced aeromodelers can be of help in the Civil Air Patrol as ground crewmen and airport assistants. Go to your local airport and find out if a unit of the Patrol has been set up. If so, volunteer your services. Complete details will be available from the airport manager.

Air Youth Organization

The basic unit in the new Air Youth organization which is carrying on and extending the former Air Youth of America program is a "Flight" which is made up of five to fifteen young aviation enthusiasts who have enlisted the services of a qualified senior Flight Leader (see N.A.A.'s Organization Bulletin No. 3).

Interested adults who are desirous of participating in the nation-wide program may join Air Youth as Participating, Contributing, Sustaining, or Patron Members.

The basic principle of Air Youth is to provide pre-trained personnel for aviation. This is in accordance with the keynote of N.A.A.'s weekly radio programs which state, "Air Youth Today—Air Leaders Tomorrow."

The Air Youth Division of the National Aeronautic Association is a vests-off, sleeves-rolled-up organization geared to America's war effort. It invites all interested patriotic Americans to join in its drive to put Aviation in every classroom in the country.

Air Youth Broadcasts

Air Youth Today . . . Air Leaders Tomorrow.

This is the theme of the series of fifteen minute broadcasts which have been sponsored by the National Broadcasting Company and the Air Youth Division of N.A.A. over the NBC Red Network.

Among the speakers have been Major General Carl Spaatz, Chief of the Air Force Combat Command, United States Army, and Rear Admiral John H. Towers, Chief, Bureau of Aeronautics, United States Navy.

General Spaatz spoke as follows: "This



A REAL GASOLINE ENGINE \$695

Here is your opportunity to buy a kit of the famous G.H.Q. Gasoline Motor. ABSOLUTELY COMPLETE — ALL MACHINING DONE—READY TO ASSEMBLE. All you need is a screw driver. No mechanical knowledge required.

Specifications of New 1942 Model

4 Port 2 Stroke Cycle. $\frac{3}{8}$ " Stroke. 15/16" Bore. 300-7,000 R.P.M. Bearing Surface, 1 $\frac{1}{2}$ " Long. Crankshaft, 5/16" Diam. Rotation, Either Direction. May be run inverted. 1/3 Horsepower. Class C under NAA Rules.

30 MINUTES TO ASSEMBLE

Imagine operating your own G.H.Q. 1/3 Horse Power gasoline engine—small enough to fit in the palm of your hand—yet turning up over 7,000 revolutions per minute and powerful enough to fly model airplanes of from 4 to 10 foot wingspan, and propel model boats from one to six feet in length and midget cars that travel over fifty miles an hour! There are also hundreds of other ways you can enjoy using this miniature yet powerful power plant—for small pumps, generators, compressors, blowers, fans, grinders and countless other experimental purposes.

This engine has been tested and proven over the last eight years. Over sixty thousand of these powerful little G.H.Q. engines are now in actual daily use. Why not join the ranks of these hobbyists?

**15,000 SOLD IN
THE LAST YEAR**

FACTORY ASSEMBLED

**READY
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—complete with coil and condenser—

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ORDER: We Ship Coll. C.O.D. Same Day

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G. H. Q. MOTORS, Dept. M, 40 East 21st St., New York, N. Y.

gives me an opportunity to talk directly to the army of young Americans on whom we in the Army Air Forces must rely heavily in the coming months and years.

"In the main it will not be the generals, or any other older men, who are going to win this war . . . particularly the war in the air. It is you who will carry the day.

"The Wright brothers were still boys when they set their minds and hands to the task of transforming their kites and gliders into the first man-carrying powered airplane. In no other field of human endeavor has the spirit of youth discovered so endless a challenge nor so unlimited an outlet for the inventiveness, the daring, the faith and the versatility that go with being young.

"History shows that nations rise and fall in accordance with the ability of their people to adjust themselves to the times in which they live. For centuries the youth of England were nurtured on the great traditions of the sea, and generations of Britons ruled the waves. America, birthplace of man's wings, launched the newer tradition of the air. Let her sons never forget this.

"From the ranks of our model plane builders and junior aeronautical clubs must come the brains and vision and skill to weld the mighty air power upon which the salvation of this hemisphere in a large measure depends. We are becoming a nation of flyers. Keep your eyes to the sky, for it is there that the destiny of America lies. And Keep 'em Flying!!"

Admiral Towers spoke as follows:
"The youth of today will be the leaders

Everything is in the kit, including Champion spark plug, COIL, CONDENSER, tank and cap, ignition wire, cylinder, piston, connecting rod, timer, crankshaft, all screws, nuts, bolts, simple illustrated instructions, etc. Every part is fully machined and finished. A SCREW DRIVER IS THE ONLY TOOL YOU NEED. EXACTLY THE SAME PARTS THAT GO INTO THE G. H. Q. ASSEMBLED ENGINE.

The only nationally advertised kit that includes a coil, condenser and wires.

Identical Engine Less Coil and Condenser \$595

ALL PARTS FINISHED & GUARANTEED



ENGINE IS COMPLETE AND READY TO ASSEMBLE!

Your engine comes to you with every part completely finished. Our factory trained skilled mechanics, using the latest automatic precision machinery, have finished each and every part to the last detail. You merely assemble the parts in accordance with the few simple instructions given, using only an ordinary screw driver, and inside of thirty minutes your engine is ready to operate.

Not only will you and your friends have the thrill of seeing an engine ASSEMBLED BY YOURSELF operating, but you will gain a knowledge of gasoline engine theory and practice that will be of real practical value to you.

FREE!!

Send for free circular or 6c for circular and loose leaf Jumbo catalog of hundreds of model plane, boat, car and hobby items.

DYNAMIC WINGS

The wierdest of pipe dreams will dance before your startled eyes; spinning, soaring, flying automatically in a manner to turn a humming bird green with envy—the long awaited self-piloting gyroscope. (Patent No. 2,257,971.)

In the beginning the Great Designer invented a wing design for carrying seeds, a mystifying whirling leaf that performs in any weather, that flies its burden through the wildest gale with the greatest of ease. Its miraculous ability to rest in a horizontal rotating gliding attitude, even when all winged creatures are grounded, inspired the hundreds—yes, thousands—of experiments in the creation of Jyro Wings; precision instruments of flight foreshadowing for man the aerobatic dexterity and freedom of the dashing dragon fly.

You'll gasp for breath as Jyro Wings break into action far overhead, whirling, circling, dipping, soaring, like swallows playing before a rising storm. Just that thrill may never come again, but your tingling spine and pounding pulse will serve a purpose if you catch a glimpse of the metamorphic power that can change the world's pedestrians into free winged supermen.

Jyro Wings are scientific artifacts provoking original ideas for experiments—enterprise—adventure. They're flying models of a new mode of flight, indicating its feasibility with portable detachable wings. Made of metal and vegetal parchment. Eight inch rotary span. Send just one dollar for yours, postpaid, and learn about superdynamic flight.

JYRO WINGS CO.
954 Eddy St. San Francisco
CALIFORNIA

DOUBLE VALUE Master DE LUXE SCALE MODEL SOLIDS

New Douglas Bomber \$1 KITS
Grumman Skyrocket
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SHAPED BODIES—WINGS—BLOCKS
FULL SIZE 3-VIEW PLANS
EVERYTHING IN THE KIT! NOTHING ELSE TO BUY!

DOUGLAS 'B-19'



Giant Army Bomber 19" Wing Span

Perfected production methods only makes these values possible! \$1 kits contain die cast props, all metal landing gear, engine, propeller, etc., etc., everything! (Complete RR list in April, M. A. N.)

DEALERS Immediate delivery through dealers or direct at regular discounts.

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Ready for delivery April 10th.

Write for FREE literature

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Latest Developments

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RADIO CONTROL

A booklet written for the radio control beginner as well as the expert. Features—"The theory of the RK-62 receiver"—"Control devices"—Table of A and B batteries—A comparison of the electrical and mechanical qualities of bakelite, steatite and polystyrene—Self-neutralizing escapement—Sequence solenoid—Rubber powered selector—Rubber powered indicator—"Radio Control Circuits," an article written in answer to the questions asked in the thousands of letters received by us during the year 1941. Eighteen different radio control hook-ups with hook-up diagrams.

Ask your dealer or send twenty-five cents for illustrated instruction manual. Stamps will not be accepted.

Radio Control Headquarters
P. O. Box 214

Deal, New Jersey

Nationals Winning Miniature Air Transport

(Continued from page 11)

various meets. Anyone with a little experience in scale model building who builds a model of this ship from the following plans can be a threat at any meet.

You will notice the model is built very sturdy: designed to fly outdoors in almost any kind of weather, and to turn in consistent flights of over a minute.

Fuselage: First make a full scale layout of all necessary parts. Be sure to lay these out accurately in order to make templates for the wing ribs and tip pieces fit properly. When cutting out parts, be sure to make all joints square. Do not be afraid to use a little sand paper. This is important; a model will not look any better than the woodwork underneath the covering. Be careful not to use too much cement as this adds additional weight, does not increase strength and only makes it harder to get a good covering job. If the model is for competition remember that good workmanship and finish means a lot of additional points.

Start building by making both fuselage side frames in conventional manner, being careful not to put pins through any main structural member, and while these are drying work on the nose block, as that is part of the fuselage. Cement the two blocks together with very little cement as this is only a temporary joint, to be cut open again to hollow out the block. Carve the block to shape and give it a rough sanding. After this cut the blocks apart; hollow out the block by drilling about $\frac{1}{2}$ " diameter hole, using a small gouge or chisel to hollow out the remaining area. The wall thickness on the finished block should be about $\frac{1}{2}$ " all around. Do not hollow block too much as weight is needed in the nose.

Now drill or cut a hole in the forward block to allow rubber to be pulled out the front. This hole must be at least $\frac{1}{4}$ " diameter and be sure it is centered and square. Now cement the blocks together and give final sanding with very fine sand paper.

A suggestion on how to arrive at a good finish is to use cement, slightly thinned, as a primer. Give the block four coats of cement, sanding all the bumps off between each coat. Then give the block one coat of clear dope and finish with the back of the sand paper rubbing rapidly until the paper feels warm. This gives a high luster. This is all done before cementing the block to the fuselage.

Now continue to build the fuselage in the conventional manner by cementing both aft ends together and cementing the nose block in place. Next add $\frac{1}{8}$ " square cross members and all formers. There are no formers used on the fuselage sides. Build stringers out away from the fuselage of small blocks varying from $1/32$ " to $3/32$ ", as shown in prospective drawing.

The next step is the landing gear, made of .047 diam. piano wire and soldered together. Be sure to use plenty of flux, as these joints must be good. It is then bound to the fuselage with fine thread and

plenty of cement. Now make the landing gear struts. Be sure to notch struts to receive the wire; this can be done very easily with a broken razor blade. Sand and finish the struts, same as the nose block. Cement them in place and bind top and bottom, to make it a permanent job, as shown in the prospective drawing. Now complete the fuselage by adding cockpit covers and stringers. Be sure to give the fuselage a good sanding round all stringers and longerons, sanding lightly with a large sanding block and fine sandpaper.

When covering fuselage cover both sides first. Dampen paper slightly with water, using a spray gun which enables you to cover the sides with one piece of paper for each side. Cover the top in the same manner, one piece from the cockpit back and one from the cockpit forward. Cover bottom, being careful not to form wrinkles around landing gear. It may be necessary to cover the bottom in a number of pieces to prevent wrinkles. Now spray the entire fuselage with water and let dry. If any wrinkles occur they can be removed by wetting the paper at the wrinkle, provided it is not too big. Be sure to finish the top of the fuselage back to the rear cockpit in the same manner as described for the nose block. Now paint the nose and fuselage top silver, applying about three coats until the finish is very shiny. Use masking tape on the silver and spray remaining parts of the fuselage with colored dope. A red or yellow fuselage makes a beautiful model, if trimmed properly in black. We used an ordinary mouth spray to spray the dope which should be well thinned out with thinner, about 50% thinner and 50% dope. Give the model about 3 or 4 coats to bring a smooth color, do not put on too much dope because it increases weight.

Tail: Now make the rudder and stabilizer. This needs little explanation because it is very simple. Sand carefully using the same large block; fair edges carefully and cover. Be careful not to get warps. We would advise pinning all flat surfaces to a flat board while water-shrinking and doping. Use silver dope for the stabilizer; two coats should be enough. You should be able to see a little light through the tail, when holding to the light. Cut slots in fuselage to receive stabilizer and cement stabilizer and rudder in place. Use sharp razor to slot the rudder and stabilizer to receive aluminum hinges.

Wing: It is essential to make good joints on all the wing's leading and trailing edge. Tip pieces should be bent up at a slight angle. Be very careful when shaping the wing tips and trailing edge section at the wing center. These should fair smoothly into the airfoil section. Cement the dihedral in place by using blocks under each wing tip; all dihedral joints must match each other perfectly. No gussets are required because the wing struts take most of the flying load. Make wing in one piece including the ailerons. These will be cut out later. Sand with fine sandpaper and a large block. The leading and trailing edges should be very well faired, important from the workmanship standpoint. Now cut out the ailerons. Cover wing and ailerons separately.

GRUMMAN F3F1 U. S. NAVY SHIPBOARD FIGHTER



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ately, being very careful to avoid warps. Cover upper wing surface first. Cement tissue to the high camber point of the airfoil at the center of the wing and pull out toward tip. Cement in place at point about 40% back from leading edge. Now cement trailing edge down working from the center outward; be careful to avoid corner wrinkles.

Finish covering the wing top by cementing the leading edge in place, cover the bottom in the same manner. Water-shrink the wing and pin on a flat board, use blocks every 4" or so out to the wing tip to avoid warping. Cover ailerons and shrink paper. Now install aluminum hinges using a broken razor to make slot for hinge and cement ailerons in place. Spray wing with 2 or 3 coats of silver dope to get desired color. Pin down between each coat.

Now make all the wing struts from 1/8" x 3/8" and 1/8" x 1/4" hard balsa. Fair struts and finish the same as the nose block. It is a good idea to sand trailing edge of each strut before cutting into strips. This is done by knifing a sheet of 1/8" hard balsa with razor and sandpaper block. Then cut into 3/8" or 1/4" strips and sand leading edge round. You will find this a very convenient method. Now cement fuselage struts in place as shown on the prospective. Be sure they line up and that the wing sets on at the proper angle of incidence. Trim the struts to suit. Now cement the wing in place, but first cut away the paper at each joint using a broken razor blade. *This is essential! A model is no stronger than its weakest joint.* Cement all the struts in place. Add engine detail as shown on the plan. All parts should be painted before assembling. All details unless otherwise shown are black; India ink may be used for striping, but if black planefilm is available a much better and cleaner job can be done. Cut strips of planefilm 1/16" wide and apply in place with thinner. Numbers can also be applied in this manner. Be very careful to get strips or numbers in proper position for once thinner is applied it is impossible to move the planefilm. The model uses a 13" diameter propeller carved as shown. If the model is not for competition, use two inch air-wheels. In scale model competition, you must make every part of the model yourself except for bearings including the wheels. See A.M.A. rules governing scale models.

Flying the Model: Test fly the model on a calm evening on a field where there is plenty of high grass and room. The hole in the nose plug is drilled crooked to vary thrust adjustments slightly by turning the plug around. Be sure to get the plug back in the proper position after winding. The model should balance about 40 to 50% back from the wing leading edge. Hand glide, making adjustments to the controls until the model glides in a smooth flat glide with a slight turn to the right. Now give the propeller a few hand winds to feel out the model's characteristics. On each flight gradually increase the number of turns, finally to full power. Wind with a winder about 50% of full power. If model does not act properly make proper adjustments of the controls and try again. After getting the

desired flight, give model full winds with a winder and you will be surprised at its performance. The model uses 18 strands of 3/16" flat brown rudder. It may be made lighter by omitting color doping and controls, acting more like a commercial than a scale model, climbing very rapidly and gliding extremely well. It will also stand abuse better because it is lighter. You will get a real thrill seeing a scale model floating around in a thermal. But you may also get a depressing feeling when it passes out of sight—so be careful what time of day you fly unless entered in a contest. It should turn in flights of over 1-1/2 minutes consistently, flying in a large circle with torque under power and in a small circle to the right in glide. When all adjustments are made put a drop of cement on all controls to prevent them from coming out of adjustment. You will have much success with this model and the author will be glad to hear from everybody who builds one.

VICTORY

Air War in the Pacific

(Continued from page 7)

ravages of Nazi kultur. This intent of our enemies is all too clear; the treacherous steps already taken along that road, is all too clear.

All sudden attacks may easily meet with spontaneous but temporary success. Hitler's Napoleonic march into Russia has bogged. General Rommel's caravan towards Suez has died of its own weight. In time Japan's miraculous onslaught may waver while supply lines, stretched into a thin cord, is enlivened. At that instant we must and will strike, as have the Russians and as have the Anzacs and Tommies in Libya.

Behind the headlines lie the stories, blood-spattered yet undaunted, of opposition to the yellow-man's march: the British, Dutch, Chinese and our own Yanks. Japan's victories have not been without cost, a price to pay for her captures. A less desperate group might easily have weighed the toll against the spoil and seen the futility of the future. Such, however, is not Japan's war philosophy. If die they must, their enemies must go down with them.

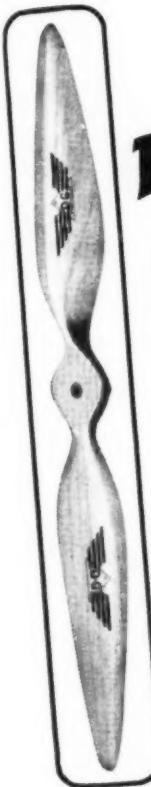
Let us survey that cost, survey the deeds of sacrifice which have impeded the Rising Sun's course, which, God willing, will halt it once and forever.

The story of Pearl Harbor has now been told, for the most part, in the papers, periodicals and newsreels. Hong Kong's fall was but a formality, for she has long been a ward of the Japanese, her international settlement alone maintaining its freedom. But the desperate defense of Manila was a far different story. It, too, has been told and the stirring deeds of the Colin P. Kellys, George Welches, Kenneth Taylors, Randall Keatons, Marshall Andersons and hundreds of their blood, re-live the daring of Lexington, Concord and Ticonderoga.

To fly and fight from a modern military airdrome is one thing; but to attack the enemy from crudely flattened sugar-cane fields, zoom aloft from smoke-laden marshes and alight in machete-cleared thickets is a far different thing.

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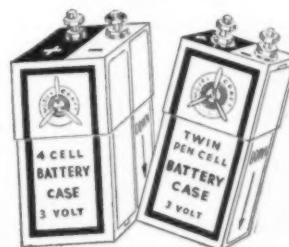


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To analyze the situation requires consolidation of a number of factors. Air strength in the South Pacific was made up of the Dutch East Indies Air Force, flying American-built Brewster Buffalo fighters, Royal Australian Air Force with Bristol Bolingbrokes (modified Blenheim light-bombers) and Handley-Page Hampden bombers and a detachment of Royal Air Force Handley-Page Harrow bombers, Gloster Gladiators and a squadron of Hawker Hurricanes at Singapore.

For many months, a new route for Lend-Lease flying equipment has been in use following many more months of research and development. This route was a tortuous trek more than half-way around the world. Curtiss, Boeing and Consolidated warplanes started from Cuba, thence to Pernambuco and across the South Atlantic to Dakar. The giant Boeing and Consolidated multi-engine bombers were flown, the Curtiss machines shipped across this vast water stretch. General George H. Brett, formerly Chief of the Air Corps, now of the United Nations High Command, flew in a giant Liberator bomber on a trip of inspection, was caught by the war in India and thence traveled to Burma to assume his command. From Dakar, the supply route continued to Libya, Cairo, across to Karachi and Rangoon and thence into the East Indies, principally in and around Batavia in Java. Known to be at this point prior to the Japanese invasion were Boeing B-17, Consolidated B-24, Curtiss P-40, Hawker Hurricane and Vickers Wellington warplanes, in addition to Dutch Fokker, Junkers and Brewster Buffalo machines. Also in this region were 100 Curtiss P-40 fighters of the American volunteer Air Force formerly in China but thence moved to Java.

This group, under command of Colonel Eugene L. Eubank, was steadily reinforced by heroes from Manila, many of them wearing decorations earned in the smoke and sweat over that beleaguered city. Australia, largely a component of the Empire Training Scheme, had and still has a 5,000-man supply of trained pilots but few combat airplanes, their equipment being made up largely of Wirraway (North American design), Miles trainers and some older Royal Air Force combat planes now used for training purposes.

After the fall of Manila and the Japanese advance to Singapore, these forces were further augmented by arrival of several U.S. Navy aircraft carriers, including the Lexington, Saratoga, Ranger and Yorktown. Their complement (80 per ship) of fighters, bombers and torpedo planes was a welcome addition and these Naval planes, due to their modernity and skilled piloting, did a considerable portion of the damage to Japanese shipping. Their actual toll, according to latest report, included two cruisers, eight destroyers, seven submarines, one merchant ship (Yawata class), one gunboat (off Wake), one mine sweeper (off Luzon), two lighters and one landing ship off Tarakan and a total of 42 transports, supply ships and tankers.

Prime problem was to analyze enemy tactical habits and capitalize on them.

After the first few weeks of war a rough pattern of Japanese invasion tactics was mapped. First step was the reconnaissance of proposed landing beach or shore by air, normally carried out by Type 90 biplanes and Mitsubishi Type 96 two-seater biplanes. On the night preceding attack troop-ships, landing-boat carriers and naval convoys establish a rendezvous at a designated spot, usually behind the protective covering of an adjacent land-fall. Landings are usually made between twilight and dawn on days when high tide comes just before dawn. When possible periods of rainy or stormy weather are chosen in order to increase the element of surprise and make off-shore air patrol inefficient if not impossible. Troops are transferred from transports onto landing-craft carriers just off the landing beach. These landings are covered by low-flying pursuit and dive-bomber aircraft and by a barrage of destroyer fire often at a range as short as 1,300 yards. This latter is possible by an extreme elevation of the destroyer's guns and packing of a reduced charge, giving a "howitzer" effect.

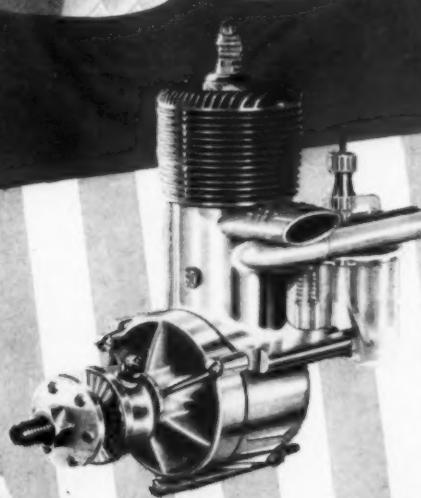
Landing-craft carriers are converted whaling boats from whose beam and stern open large troughs down which the landing craft slide. These landing craft or "shore-transports" are of many types, used for various purposes. To protect landing forces, a large open boat mounting a small cannon in its nose behind a large armorplate is used; a smaller type mounts a machine-gun in the nose. Both these ships feature hinging armor plate which folds forward onto the beach and permits cannon or machine-gun to be rolled forward and onto the beach. A third type mounts an anti-aircraft battery (machine-guns in pair or fours) used to protect the troops against defending dive-bombers. Main landing craft is a huge affair powered by an airplane engine driving a large aircraft propeller. These boats are about 50 feet long, of 10-foot beam, carrying from 110 to 120 men fully equipped and has a draft of only 2 feet. In the water as much as 10 feet of its bow rides free; it is steered from the forward end.

Typical procedure covers about five miles of beach-head protected by a line of destroyers about 1/2 mile out to sea and a heavy cruiser or battleship about 3 1/2 miles off-shore to reduce any major fortifications or opposition by heavy shellfire. Two groups of transports remain between the destroyers and cruisers awaiting their turn to unload, depending upon the preliminary attacking force's success.

From 5 to 10 miles at sea lies the aircraft carrier releasing its dive bombers and protecting fighters. About 50 barges begin the assault each armed with 2 or 3 machine-guns and a heavy barrage from destroyers. Each barge also carries from 1 to 3 "V-front" light tanks mounting .50 caliber machine-guns.

A close liaison is kept between ground and air units by use of portable radios carried by officers who thus direct airplanes from their ground vantage point. With their usual air superiority, the Japanese are able to observe Allied fronts of resistance and advise ground troops of the most advantageous route.

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Japanese landing troops armed with grenades and automatic rifles leave all unnecessary equipment on the beach to be brought forward later but available in event of a rapid retreat. Barges follow carrying more tanks and light motorized equipment as the situation permits.

With this tactical organization in mind, the Allies quickly mapped out a defensive strategy calling for extensive aerial offshore patrol to detect preliminary reconnaissance and the subsequent rendezvous. Should the attack come as a surprise and a landing be made, low-flying pursuit and attack planes swoop low over the invaders while interceptor types climb high to ward off the protecting Japanese fighters from the carrier. Bombardment planes are immediately dispatched to destroy the enemy squadron units, normally carrier first, cruiser next and destroyers as the situation permits.

Early Japanese successes were made possible by the surprise, power and strategy of their attack and in the case of landings on Lingayen Gulf and other points on Luzon, at Tarakan and again at Balikpapan, defending forces were at a loss to cope with the situation. An attack is organized, a defense is thrown together when the situation is a surprise. Now, however, defenses have been organized.

Attack on the Macassar Straits was certainly no surprise and the defending forces were well prepared. Then came the assault on Bali and United-Nations forces were gathering strength largely through a unified command and knowledge of the situation. On hand were Flying Fortresses and Lockheed Hudson bombers, Curtiss P-40 and R.A.F. Hurricane fighters. Nearly 80 Japanese planes were destroyed, a large cruiser went down, as well as three destroyers and 14 transports. The strategy was no longer a secret, the attack was smashed until a second and a third landing squadron appeared and the Japanese gained a foothold. They met the same fate on Timor and Surabaya.

Participating in these actions were hundreds of Yank pilots who tell their story undramatically, almost cryptically:

Captain L. H. Galusha, of Little Rock, Arkansas said: "We peeled off from 12,000 feet and let go at 2,000 feet scoring a direct hit on a transport. Two other bombs fell mighty close!" Galusha commanded a flight of Douglas SBD-3 dive-bombers aboard an aircraft carrier detached for duty at Bali. Two other similar ships, commanded by Lieut. J. B. Summers and Captain D. H. Skiles concentrated on the protecting cruisers, dropped several direct hits and their gunners shot down a total of six Japanese Type AN-1 (Nakajima) fighters. Captain Eliot Vandervanter, of Washington: "My plane scored a series of direct hits at the water-line of a destroyer and hit a transport." Lieutenant P. L. Mathewson, a slender 27-year-old pilot from Richmond, Va. scored a direct hit on a second cruiser and brought down two of nine attacking Japanese fighters.

Real success crowned the United States Navy's attack on six Japanese bases in the Gilbert and Marshall Islands. In addition to an undisclosed number of cruisers and battleships pounding bases into submission was an aircraft carrier and its

complement of 75 dive-bombers.

Total result of the raid, besides reducing of land bastions was: 16 ships, including an aircraft carrier, light cruiser, destroyer and two submarines, 41 Japanese airplanes including 21 bombers and land facilities such as hangars, coastal batteries, fuel tanks, munitions dumps, radio stations, warehouses and stores. The fighters (Grumman F4F-1 single-seat monoplanes) downed 9 of the bombers on a single foray. Our attacking forces lost 8 dive-bombers and 2 fighters.

The Douglas dive-bombers did their deadly work with meticulous destruction, going over their objectives in waves of 18 ships each, 6 in each wave. Bombs rained down on hangars and enemy vessels anchored in port just at dawn and Pearl Harbor was paid back if not in full, at least in part. The savage attack carried on through the morning until noon, with Navy fighters gunning defending bombers into the sea as fast as they came aloft. Eight Japanese bombers in formation dropped 16 five-hundred-pound bombs in a single attack, all crashing harmlessly into the sea off the stern of a Yank destroyer. Navy fighters scattered the bombers, downing five of them, the others disappearing to the South over open water.

Boeing and Consolidated Flying Fortresses have been getting in much deadly work, particularly the murderous smashing of the giant Japanese troop convoy in the Macassar Straits and destruction of Japanese transports and ships at Jolo, in the Philippines. This latter flight was commanded by Captain James T. Connelly, who also commanded a flight of B-17's to Mindanao and rescued 23 American pilots stranded there for more than three weeks.

American planes have outmatched those of the enemy often by as great odds as ten to one. Their speed and fire-power hopelessly outweighs that of the enemy and the pilots' skill and daring, trained technicians rather than frantic suicide crews, has proven a match for anything the enemy has yet produced and certainly the Japanese have thrown their very best into this do-or-die effort.

The work of the heavy bombers, to which the Japanese have nothing comparable, has been particularly astounding, with hundreds of thousands of tons of enemy shipping now resting at the bottom of the foaming Pacific; mute testimony to the strength and great hitting power of these giant bombers.

We have, at all times, been desperately outnumbered, but the superiority of our American designed planes has manifest itself in the terrific toll taken of enemy planes. Estimates as low as 2,000 and as high as 5,000 enemy fighters and bombers downed have been made. And these are only the vanguard of our military strength.

To the pilots, those fighting birdmen, however, must go the greatest credit, for their skill and daring has made possible extraction of the last ounce of fighting power from our combat planes. And particularly to our Navy pilots must go a share of the credit, for they have proved that not only in peace but in war they are "the finest naval air force in the entire world."

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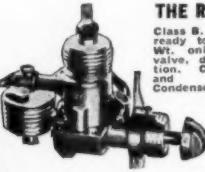
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VICTORY

Nationals Indoor "Stick" Winner

(Continued from page 23)

ing. Then string it over the braces on one side towards the rear where it is anchored or looped by a notch on the stick. Carry it forward again and anchor it to the cap by forming several zig zags and cementing. While stringing the wire make sure to have an upward bend of about 3/64th on the stick. This bend will straighten while the model is under power. Without it the stick would bend downward under power. Put a drop of cement over every spot where the tungsten is supported on the braces.

TAIL BOOM—Boom is made in same manner as the stick, except that you will have to make a tapered form from hard wood. When cementing boom to stick be sure to insert the boom about 1/16" to

provide good cementing joint.

ASSEMBLY—Complete the wing by cementing the front and rear posts and the top tungsten brace. While attaching tungsten wire be sure to avoid warps or washings and washouts. Clips should fit stick snugly without crushing.

Cement stabilizer and rudder to the boom. After they are well set, clip the wing in place for complete line-up.

THE PROPELLER—The method of carving the propeller will also be found in the March issue. The block size and quarter-graining procedure will be found on plans. Shaft is shaped from .014. Use two washers.

NOTES—All microfilm surfaces should be made at least a week before flying to allow for warps to show up which should then be corrected. The model uses 5/64 Special Brown rubber. Make a 20" loop, lubricate well and prewind it several times before attaching to the shaft and rear hook.

If the model is built correctly, it should fly with the wing at about the position indicated. Although wing incidence is 1/4", it is about 3/16" in relation to the stabilizer which is set on the tapered boom giving it about 1/16" positive. Note the thrust adjustments.

FLYING—First balance the model so that the C.G. falls within an inch or two in front of the trailing edge. When this is done, the wing should not be moved. Take up some of the rubber slack with few winds and glide the model. Make adjustments by bending the tail boom until the best glide is obtained. Then wind couple of hundred

turns. This should be enough to keep model level for one or two left circles. Any stalling or diving tendencies must be counteracted by bending the thrust bearing and not by moving the wing.

The ceiling will determine the length of the motor. When flying the model do not wind the motor beyond 80% of its maximum as it will deaden after several flights. But in a contest you can wind the rubber to its limit providing you are ready to change the motor after every third flight. If you want to keep below girders, remove the high peaks of the rubber torque by removing some winds after wind-up. You should have no trouble, with an 85 ft. ceiling, in getting 20 minutes—or more.

VICTORY

Axis Devastator

(Continued from page 25)

T2D-1 was a twin engine seaplane powered by two Wright engines, one of the earliest Navy air-cooled designs, and had a top speed of 110 m.p.h. This ship was slightly larger with a wing span of 57 ft. and a length of 45 ft.

The technique of torpedo launchings was developed with this ship and invaluable experience was gained by Navy flying personnel in the correct procedure for launching and handling of torpedoes. In addition, the E. W. Bliss Company continued its engineering and development of the explosive weapon and, in company with Mr. Leavitt, a pioneer naval engineer, developed the modern type now used almost exclusively throughout the Fleet. For a complete description of this potent weapon refer to MODEL AIRPLANE NEWS, March, 1942 issue.

It would be unfair to omit the names of Glenn L. Martin and the Naval Aircraft Factory in the list of contributors to the U. S. Navy's present leadership in the development and use of the torpedoplane. The Martin T4M-1 and experimental T5M-1, later developed by the Great Lakes firm into the highly successful BG-1 dive-bomber, both offered much valuable test data to the Navy. The Naval Aircraft Factory, working behind the scenes as always, preceded each design with countless weeks and months of research and usually constructed the prototype airplane from which the private vendor's production model was designed.

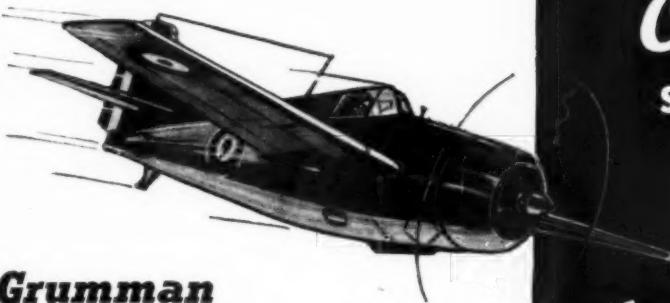
With perfection of all-metal monocoque and cantilever aircraft construction came enormous possibilities in the combat airplane design and the great strength qualities of this new method made possible the lifting of far greater loads than was ever before possible. In 1935 the Navy reorganized its design requirements and a series of tactical combinations were experimented. This year began the long train of dual and even triple purpose Naval planes such as the Patrol-Bomber, Scout-Bomber, etc.

With perfection of the torpedo plane technique in the early 'thirties, the Navy was prepared to receive a ship designed specifically for the purpose. Specifications were the most grueling ever issued up to that date; they demanded high speed, great maneuverability and, above all, a great lifting strength in addition to requirements of the torpedo launching apparatus.



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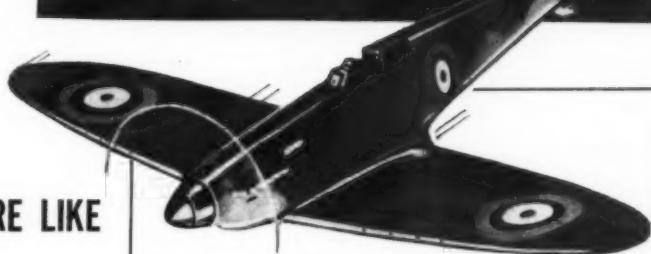
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The Douglas firm designed and built such a plane, in competition with two others. This ship, known as the XT3D-1, was first flown in 1936 and spent nearly a year at Naval Air Station, Anacostia, in competitive tests ultimately emerging victorious. An order for 110 of these ships was signed, one of the largest peace-time contracts for airplane construction signed by the Navy to that date. With provisions for bomb racks, a third member of the crew and various detail modifications, the ship emerged as the TBD-1, our Plane-on-the-Cover this month.

Hundreds of detail design requirements were laid down by the Navy Department for construction of this ship. First of all it must provide adequate provisions for mounting transportation and launching a 1,000-lb. torpedo. It must carry three men and provide for operation from the cramped decks and still more cramped storage rooms aboard an aircraft carrier. The answer was folding wings but the technical problem of how to fold the wings and still maintain their strength in flight was difficult and manifold. However, the TBD-1, lately christened the "Devastator," in accordance with the Navy's new policy of replacing the complicated numeral designation of its combat planes with sobriquets, solved many times over the many intricate problems of its design and its service with the fleet has been and will continue to be a record one.

The fuselage is built in a single monocoque unit and features a large and long opening in its upper surface to provide for the crew of three, mounted tandem. It is built up on a series of vertical bulkheads and frames connected by extruded section stiffeners and covered with 24ST Alclad sheet skin. Emergency flotation compartments maintained by use of water-tight bulkheads are built into the fuselage, a large one just below the pilot's cockpit and two others under the crew floor and aft of the rear pit.

The fixed tail surfaces are all-metal construction with Alclad skin covering a framework of ribs and laterally-laid stiffeners of the extruded section type.

Wings are full cantilever built up on a framework of two spars, pressed flange ribs, laterally laid stiffeners and skin plating. Due to necessity of breaking the spars at a point approximately one-quarter span, it was decided to give increased stiffness to the outboard panels by use of corrugated skin covering.

The problem of wing location was a difficult one since the spars had to, of necessity, clear the water-tight bulkhead and torpedo-bay beneath the pilot. This low location threw the trailing edge still lower necessitating use of generous fillets to fair the trailing edge into the aft fuselage. This feature gives the Devastator its predominantly "tubby" appearance and makes its identification instantaneous. Further affecting this situation was the requirement calling for a bombing officer's prone position with opening doors in the fuselage forward end. For this reason the engine mount was placed high permitting the torpedo-aimer good visibility from his combat station.

Power is supplied by a single Pratt & Whitney "Twin Wasp Junior" engine model R-1830, double-row radial air-cooled design developing 850 horsepower. A Hamilton-

Standard three-bladed controllable-pitch propeller delivers this power to the air. The engine mount is of welded chrome-molybdenum steel tubing; the entire powerplant section treated with an anti-corrosion compound. The engine itself was cadmium plated to stave off corrosive effects of salt water near which it is always operating.

The oil tank is mounted at the upper rear section of the powerplant compartment and the battery on the right side just below the oil tank. The fuselage itself is divided into two levels upper crew level and lower level for the torpedo-aimer and torpedo rack. The pilot sits high and forward, his position being dictated by the high engine-mount. This necessitated construction of an abnormally high sliding enclosure which, due to its design, must fold rearward and upward in order to clear the enclosure assembly immediately aft. A welded steel tubing over-turn structure with head-rest protects the pilot and crew in event of a nose-over in landing.

Fuel is in two main inboard wing tanks and is carried to the engine by an engine-driven fuel pump. Due to lack of powerplant section space it was found necessary to mount the oil cooler on the lower surface of the starboard wing panel. The carburetor air intake is within the engine cowling along its upper surface.

The control surfaces are all-metal construction fabric-covered, equipped with controllable metal trimming tabs to compensate for lateral and longitudinal changes in the airplane loading stability.

Use of hydraulically operated equipment was generous, such items as engine cowl flaps, landing gear, landing flaps, torpedo doors and wing retraction being hydraulically operated and controlled. This last item was a vital design problem and it was deemed expedient to permit the wings to be folded by the pilot through remote control rather than by use of conventional hinges employing three to five men on each wing to accomplish the folding without damage to the wing or fuselage.

Landing gear is the simple tripod type, semi-retractable, the lower half of the wheel remaining exposed to the airstream due to lack of space within the wing contour with the wheels folding in the vertical position, necessary due to lack of space.

The torpedo is stored partially within and partially without the lower portion of the fuselage. The design, already "pot-bellied," would not permit stowing of the entire torpedo length of 15 feet within the fuselage. The Bliss-Leavitt torpedo, when stowed, lies with about four feet of its nose exposed at a negative angle down from the fuselage lower portion. The remainder of its length is fully enclosed within hydraulically operating folding doors. It is readily accessible to the torpedo officer for ignition, timing and setting of the various adjustments.

The third crew member is the rear gunner whose duty it is to ward off attacking enemy planes while the Devastator is swooping in on its deadly mission. En route to the target, the torpedo-officer functions as radio-operator and navigator. The radio is switched to the rear gunner as the objective is neared and the torpedo-officer bends down within the fuselage and crawls forward beneath the pilot to a special prone-position compartment. Two large doors open forward to permit him to adjust his sights and

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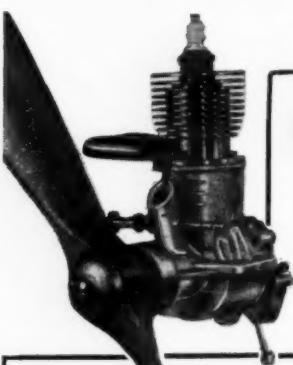
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Armament aboard the Devastator consists of the 1000-lb. torpedo, racks capable of supporting 500 pounds of a variety of bombs,

a single .50 caliber machine-gun mounted on a special swivel gun-mount located around the rear gunner's post and a single .30 caliber forward firing machine-gun mounted on the side of the pilot's upper coaming.

The Douglas (TBD-1) Devastator has a wing span of 50 ft., length of 35 ft., and stands 15 ft. 1 in. in height. It has a gross weight of more than 9,000 pounds when fully loaded with its service load of a crew of three, a 1,000-lb. torpedo, fuel, oil and machine-gun ammunition. Top speed is 225 m.p.h. and cruising speed 190 m.p.h. Range is 1,000 miles and normally operates from an aircraft carrier.

In addition to the original order for 110 was an order for 15 more slightly modified TBD's making a total of 125 in all which

top of page 19; then list the name of each plane and mail to: Sky Scouts, MODEL AIRPLANE NEWS, 551 Fifth Avenue, New York, N.Y. If this is the first list you are sending, fill in the coupon below and include it.

VICTORY

Sky Scouts

(Continued from page 19)

local defense headquarters notified of its qualification for possible assistance in national defense activities.

To qualify for lesson No. 4 read the description of the plane silhouettes at

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4

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have seen service aboard the aircraft carriers. First going into action with the fleet, in 1938, the Devastator served a comparatively long and a remarkably useful life. Still the basic torpedo-bomber standby of the Navy, at least two full squadrons are still in service and have seen duty with the Fleet in the Pacific. However, they are gradually being replaced by the lighter and faster Douglas SBD-3 (a Northrop-design) and still newer experimental torpedo-bombers of the Vought-Sikorsky XTBU-1 and Grumman XTBF-1 types, still very much on the secret list. A contract for 286 Grumman TBF-1 types was signed nearly a year ago and they may soon be coming into service.

Pioneered by the United States Navy, the torpedoplane has become by all odds the number one type of this war and the coming year holds far greater achievements for them than have been heretofore recorded. A deadly combination has been formed which has wreaked such havoc not alone on enemy shipping but on our own: the torpedoplane-submarine team which, working together, devastate surface vessels wherever they can be found.

However, with twenty-five years of experience in development and research in the use of the torpedoplane, we may rest assured that the United States Navy team can out-fly, out-bomb and out-sink the Axis by a comfortable margin. Thus far numbers have decided the score but it is significant that when the ratio of odds was reasonable, the U.S. Fleet and its Douglas Devastators has come off first and best in jousts with Japanese shipping and torpedoplanes. There have been amazingly rapid strides in the use of the torpedoplane which must, for at least the duration, remain confidential naval secrets but the results will be no secret from our headlines. The Vultee Vengeance dive-bomber now going into service with the air forces of the U.S. has provisions for mounting two torpedoes and it is understood that the huge Martin Mars flyingboat and the equally gigantic Boeing torpedo-bomber-patrol plane have a number of torpedo tubes within their giant hulls which launch these deadly missiles in a similar nature to that of the destroyer and cruiser. The torpedoplane may well win this war, and the United States must, and will be the victor.

VICTORY

Air Ways

(Continued from page 16)

utes will introduce too large an element of luck. We are not convinced that a perfect (?) flight of 2:59.8 is any better than a flight of 3:00.2.

As a result of this discussion a compromise was suggested in order to eliminate much of the "luck" factor in respect to thermal flights. It is as follows:

All flights of under 3' to be scored as such. Flights over 3' will be scored as 3'. If the flight is 4' all time over 4' will be subtracted from the 3' limit; thus a 5' flight gets credit for 2' and 7' or more gets no credit.

Possibly some of our readers will wonder why it is necessary to subtract the time over 3' from the 3' allowable limit. Why not simplify it and count all flights over 3' as merely 3'? This will have the same effect without penalizing the fellow who

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flies 3' 1" compared to one who flies 2' 58". Probably this is done to eliminate possible ties. If such is the case, MODEL AIRPLANE NEWS suggests that all those who fly over 3' be reversed in their order of placing from 3' downward at 1" intervals. In other words, if a man flies 4' and another one 6', the one flying 4' would be given credit for 3' 59"; the modeler flying 6' would be given credit for 3' 58". In this way he wouldn't be penalized for making an overtime flight yet he would not be classified lower than a modeler flying for a low time of 2' 5" because of an inefficient plane.

We suggest you write to the Contest Board, Academy of Model Aeronautics, 718 Jackson Place NW, Washington, D.C., and express your views on this subject.

Corporal R. W. Mitchell of Goodfellow Field, San Angelo, Texas, starts the ball rolling this month with a picture, 1, of his North American XP-51 solid scale model. This was built from plans appearing in MODEL AIRPLANE News. Corp. Mitchell is a ground-school instructor and realizes the values of these scale jobs in teaching his classes. The plane embodies careful workmanship together with a landing gear of unique design.

Willis Dreher of Palmetto Estates, Columbia, S.C., sends us picture 2 of his "Jabberwock," a Wally Simmers-designed endurance job. It has an exceptionally slow glide and is typical of a well designed fuselage contest plane.

Now we jump to far-off Stockholm, Sweden. Here lives Anders Wirstrom of

Stavardsgatan 9, Appelviken, who is one of Sweden's prominent model builders. He writes as follows:

"We have tried to keep pace with the quick development of the airplane and model building and have solved this problem by reading M.A.N. every month. We are glad that we still can get it. Our winter here has been cold and we have not been able to give many turns to rubber because of this. Many models have been smashed due to broken rubber, which becomes brittle and hard when the thermometer drops to +5 or -15 degrees.

"During the Christmas holidays I built a ship from plans in M.A.N. (shown in picture 3), making some small alterations to take care of the extreme Swedish winter climate. On skis the plane makes thrilling takeoffs if the snow surface is hard and even, otherwise one had better not try flying it. When coming in for landing the skis are the right thing to prevent a broken prop.

"The model has flown over one minute on 200 turns, but I hope to make a real flight when Spring and warmer weather comes.

"Times are difficult for model builders here in Sweden—our balsa supplies are used up and so are the rubber. Now we have to use our long and straight Swedish pine to build gliders and sailplanes. This branch of model building is a real science here as in Germany."

Probably American model builders will have to work under the same handicaps in the near future, reverting to gliders or

here and there a gas model powered with an old motor. Probably motors will be obtainable for some time to come, however, though the number manufactured will be diminished.

Picture 4 looks like any other gas model fuselage; however, it is quite different. This one is completely water-tight, designed that way to keep the motor and inside of fuselage completely dry when used as a hydro. It was designed by Everett Angus of Oaklyn, N.J., and built by Dick Donahue, 328 Dixmyth Avenue, Cincinnati, Ohio.

The top of the fuselage is completely enclosed with celluloid so that mountings inside can be seen. Motor and mount are completely closed and when attached to the fuselage with Scotch or adhesive tape makes the fuselage completely water-tight. The plane was tested for flight capabilities on wheels at first and has made many successful seaplane flights.

Due to the shortage of rubber, sailplanes are due for a comeback; even now designs of this type of ship are on many modelers' workbenches. Here is something contributed by Ernest Dennis of Denholm, Sask., Canada that will be helpful in sailplane operation. This is a device which creates a change in rudder setting after release from the tow-line. Mechanical details are shown in the plan, picture 5. Under the pull of the tow-line the mechanism in the fuselage slot is pulled forward. This motion is transmitted to the rudder holding it in neutral position. As soon as the ship is detached from the tow-line the tension in the rudder is released and the rubber band pulls to the right. This causes it to circle gently in soaring spirals and enables it to remain within the boundaries of a thermal when one is found. Following is a brief description of the device.

Now refer to the drawing, the towing hook is extended through the fuselage and shaped as shown; the hook slides through two eye-guides. From the upper end of the hook a light cord leads to the right rudder horn so that when the hook is in the forward or towing position, the rudder will be held neutral.

From the left rudder horn to the fin leading edge a light piece of elastic is fastened to hold the rudder in the desired position causing the glider to circle. A stop is provided to set the angle of the rudder. The rudder is hinged to the fin by means of a silk hinge.

From the above you can see that the resistance of the glider as it is being towed will cause the hook to slide forward and so pull the rudder into neutral against the tension of the elastic. When released the tension of the rubber will pull the rudder against the stop and place it in the circling attitude.

Possibly many Americans wonder how the Japanese developed and manufactured such a large quantity of efficient airplanes in so short a time. There is just one answer to this—they provided training in the various required mechanical and engineering arts. This training started at the age of 10 or under; small gliders were put into the hands of these youngsters and through a step by step procedure they learned systematically to fly one model after another, each succeeding one more complicated.

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- What pitch is required for a given flying speed.
- How gas model propellers differ from rubber props.
- How much rubber to use in a motor for any given weight.
- How many turns can be stored in a motor.
- What makes a gas engine run.
- How you can make your model stable yet efficient.
- etc., etc.

The Author

CHARLES HAMPSON GRANT

—Princeton Engineering School; Massachusetts Institute of Technology; member of the "Early Birds"; for 20 years the world's foremost model flying authority; for the past ten years Editor of *MODEL AIRPLANE NEWS*.

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intensively by Hitler and Stalin, Japan's young men were taught to think in aviation terms. As all modelers know this is a distinct language and can only be understood by those who are intimate with aviation activities. There have been so many evidences of the lack of such training during the present conflict that it is useless to go into explanation here concerning the vital merits of this system. Luckily, patriots and civic interest carried on the good work in this country, though it was ignored by the government.

Contrary to the understanding of many Americans, Japanese boys are excellent model builders because of this intensive training. Many pictures of Japanese models have come to MODEL AIRPLANE News from Japan in the course of the past years. As evidence of Japanese ingenuity observe picture 6. This model is built completely of hard wood, bamboo and paper by Jun Yasui, 80 Midorigaoka, Homiproku, Jakaku, Yokohama, Japan. It is of particular interest inasmuch as balsa wood is not used in any part of its structure and possibly typifies in this respect models that American boys will build in the future.

Contrary to popular opinion, models of this type fly exceedingly well; as far back as 1912 models were flown for more than 2 minutes, built of hard wood propellers and frame with wire frame wings covered with cloth. In fact young men learned a great deal more from these ships than they do at the present time because the problem of flight was more difficult—an airplane had to be extremely efficient to carry this load for a long period of time. Today, be-

cause of the extreme power available compared to weight of plane, it is no problem at all to obtain excellent flight. In fact some ships are merely a combination of helicopter and parachute; the propeller pulls them up and the wings let them down gently. Under the greater disadvantage of hard wood construction we look forward to seeing a model fly like an airplane again in the near future.

The most unusual plane that has ever come to our attention is shown in picture 7. Possibly you just won't believe it when you look at it, but it is real and actually flies beautifully! The most unusual part about it is its small size; the span is only 9 1/2 inches and the whole ship together, with its Super Atom motor, weighs just 9 ounces. It is also the handiwork of Dick Donahue, who calls it the "Little Devil." He says:

"Here I have accomplished something that you suggested might be done in the August 1941 MODEL AIRPLANE NEWS. I am a student in aeronautical engineering at the University of Cincinnati and have been building gas models for 8 years. A short time ago I started designing a plane with a minimum of wing area. Four months was spent developing it before I obtained what I wanted."

"Everyone who saw the drawings said it was impossible for this plane to fly; Bill Redeker said he would have to see it before he would believe it and even then he would have some doubt in his mind.

"The first flight was very successful and the plane handled perfectly. It embodies a control system which is variable from a

very small to a large movement of the control flippers. It may be flown in a very small area and costs approximately nothing to build. All flight equipment and the airplane is carried in a light overnight bag, leaving room for still another plane. At first glance the wings are hardly noticeable, they are so small and the propeller diameter is nearly equal to the wing span. No doubt this little ship may shatter preconceived ideas of model builders."

Gosta Hellstrom of Ausandare, Västmanagatan 30, Stockholm, Sweden, is shown with his Wakefield model in picture 8. Young men of Sweden are very active in model flying and Hellstrom writes that one soarer which they tested, having a span of 6 ft. 8 in., was made from a prototype which flew for 24 hours in Holland.

Not only boys are active in the model game but young women play a very important part, fliers as well as helpers. Picture 9 shows a young lady, friend of a Canadian model builder, was obligingly posed with the builder's endurance fuselage job, which took part last September in the interclub meet sponsored by the Canadian Gas Model Club in Toronto. We are indebted to E. Nesbitt of 156 Yonge Street, Toronto, for this photo.

Picture 10 may be a puzzle to many readers but to those who fly indoor models it tells a sad story. The incident occurred at a recent glider contest sponsored by the Detroit Sky Guys. The picture shows one of the boys trying to retrieve his model with a long pole, the model reposing lazily in the midst of the intricate mechanism of the public address system. A convenient bale of straw boosts him a few feet closer to his plane. It was the club's first attempt at holding an indoor contest and the results were very successful; about 16 modelers attended though 26 entered. This meet was for Class A gliders and time was figured on the best 9 flights. A.M.A. rules were closely followed. Winners and their times, seconds, were:

George Sass, 43 4/5; Ed Naudzius, 40 1/5; Bob Wolfston, 36; Dick Jasian, 35 4/5; Art Jasian 35 1/5; Jake Drake, 34 1/5; Bob Cahill, 29 2/5; John Kauer, 28 2/5; Bud Manning, 27 1/5; Don Paglia, 26 2/5.

Picture 11 shows Ken Allerton with his Class B gas job. This is a very efficient ship and is beautifully designed; the thrust line is high and the body falls well down below the c.g., resulting in a low c.l.a. A unique stabilizer is used, its tips turned up at a steep dihedral to afford sufficient fin area. Part of the fin is attached to the lower part of the body beneath the stabilizer, thus helping to lower the c.l.a. Turned up stabilizer tips help the longitudinal and directional stability to a considerable degree. The smooth airflow with this type of fin helps to prevent excessive tip whorls.

Bill Deats of 1015 Farragut Street, Laredo, Texas, enjoys building fine looking scale models; here is one of his Curtiss P-40, picture 12. Though all details embodied in this ship cannot be shown, some of these are a retractable gear, flaps and cockpit details. It was built from plans in MODEL AIRPLANE NEWS.

Picture 13 shows the Mercury Mites model club of 1592 Lincoln Place, Brooklyn, N.Y. This was taken during one of their

discussion gatherings. Members of the club are very active and attend nearly every meet within cruising radius of New York.

In picture 14 Bill Steese of Oakland, Calif., is shown with his record breaking hydro. The ship is a Class B "Westerner" designed by Don Foote and furnished the surprise of the day during the recent East Bay Aeroneers Assn's hydro record trials at Oakland. It brought him the record in Class B Open R.O.W. with an average flight time of 1 min. 36.4 sec. The ship is powered with a Forster "29" and weighs 34 oz., having 540 sq. in. of wing area. Everyone thought the ship was too big and heavy to take off the water but here again correct design overcame many difficulties.

New York

On Friday, December 12, the annual meeting and election of officers of the Schenectady Aeroneers was held. Those elected were:

Albert Streeben, Jr., President; Harold Hine, Vice President and Publicity Chairman; Emmett S. Newman, Secretary; Garrett Sommers, Treasurer; Robert Miller, Editor of "Prop Wash."

Awards of the year were presented. The big award, a cup, going to the 1941 President, John H. Schneider, as high point winner.

One of the highlights of the evening was the presentation by the club members of a handsome gold trophy to the retiring President for his efforts and endeavors in the Club's behalf. This trophy, known as "The John H. Schneider Trophy" will be awarded annually. One other highlight was the showing of three reels of colored movies depicting vividly the club's growth and activities since December 1938.

Connecticut

Fred Haesche, publicity manager of the Elm City Gas Bugs of 529 Quinnipiac Ave., New Haven writes:

"Some members of our club believe that they are the first gas model fliers to hit the air this year. It seems that at about one A.M. January 1, 1942, four of the Gas Bugs hit upon the wacky idea to go flying. At ten minutes of two, Jean Woodward sent his Buzzard Bombshell skyward closely followed by the planes of Fred Haesche and Harry Lawlor. Fred Schmidt, the fourth of the group, was less fortunate due to motor trouble and so postponed his flying to the latter morning. At that point an 'inner club' was born which was called the Nighthawks. The membership is open to Gas Bugs that fly by the light of the moon.

"William Paulson, our president, recently made a flight which resulted in the temporary loss of his prize model. After about a half hour it disappeared into the blue. The contest was held by the Prop Busters of New London and the Elm City Gas Bugs. It was an interclub meet. The plane was last seen flying out to sea somewhere over Rhode Island, but was retrieved after being washed ashore at Block Island, R.I., some 35 miles away.

"We are also proud to announce that our club is well represented in our country's forces. Morris (Mush) Woodward is in the Army Air Corp, Murray (Seasick) Goldstein is in the Navy, and Thad Has-

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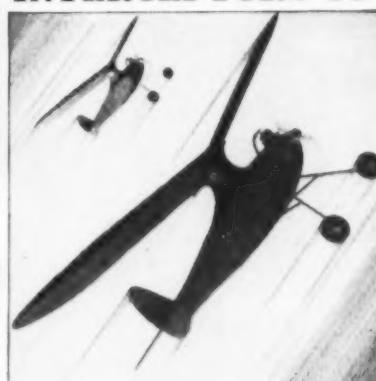
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brook is in the Marines. Each volunteered and hopes to get his share of Japs."

Missouri

G. R. Huffman of 6206 Washington St., St. Joseph, sends the following report of model airplane activities in this city:

"We are quite active in model building and to some extent flying, although we are handicapped in the latter by not having a suitable place in the city available.

"We have a contest on the last Sunday afternoon of each month, although sometimes it is held some distance from the city in neighboring towns. This contest is open to all comers who abide by the simple rules and regulations. Cash prizes are awarded the winners in the different divisions. These prizes are obtained by collecting a small entry fee from the contestants and any donations offered by any one interested.

"Something ought to be done, if possible, about the rubber situation. It is almost impossible to get decent contest rubber. The model builders are the future defense fliers of the nation and are becoming recognized as such more each day. They should be encouraged in the art.

"The Model Aero Club has regular weekly meetings for building and instruction in the club's room in the basement of the above address. We have signed up with the roll call for defense and want to help build the required 500,000 model planes needed for training the air forces."

We agree thoroughly with Mr. Huffman and wish that our national leaders would more fully realize the vital part model planes have played in national defense.

California

Here is an excerpt taken from the "F.G.M.A. News" (Fresno):
Results of A.M.A. Rubber Model Contest Feb. 8, 1942.

The day dawned foggy but the modelers were out in force and after a little postponement of a few hours the contest was started, and good times were hung up. Warren Harding of Marysville just missed a record in the Hand Launched Glider Class C Division but one new record will be asked for in the Class C Tow-Line Senior Division. It will go to Takashi Sujimoto of Fowler. There were entries from all over the state here to compete. The results follow:

Hand Launched Gliders: 1st, Warren Harding, Marysville, time 440.8 seconds; 2nd, Jim Katayama, Fowler, 109.5; 3rd, Takashi Sujimoto, Fowler, 96.6.

Tow-Line Gliders (100 ft. line): 1st, Takashi Sujimoto, Fowler, 430.5; 2nd, John Lowe, Tracy, 263; 3rd, Arnold Vandermeer, Tracy, 198.2.

Stick Models: 1st, Takashi Sujimoto, Fowler, 1,039.6; Warren Harding, Marysville, 2nd, time 318.2; 3rd, Jim Katayama, Fowler, 244.6.

Fuselage Endurance: 1st, Warren Harding, Marysville, 386.6; 2nd, Vandermeer, Tracy, 366; Takashi Sujimoto, 3rd, time 278.5.

The Fresno County Chamber of Commerce Trophy was won by Takashi Sujimoto of Fowler for the day's champion by placing in so many high places. J. R. Baker was contest director.

Massachusetts

Robert E. Ezold of 37 Lynwood Avenue, Holyoke, senior advisor of the Holyoke Gas Model Club, sends us a report of activities:

"The club has a full schedule ahead for the coming season; we anticipate the biggest and best year in our club history.

"We have two A.M.A. sanctioned meets on our Schedule—May 17th Class A meet and Sept. 20th Class AA invitation meet. This AA meet extends an invitation to all the clubs in the New England States and Eastern New York State.

"The third Sunday of February to November inclusive we hold field meets at the tobacco fields just off route No. 292 on the Holyoke-Westfield highway.

"As I am the Senior Advisor and Contest Director for the H.G.M.G. I have offered a trophy for the flier with the highest time in the air from February to the close of our club year Oct. 1st, 1942. One thousand seconds has been placed as the minimum time.

"Another cup has been put up for the longest single flight for the same period. Cash prizes are given at each meet. These prizes and trophies sure get the boys out on the field.

"Two weeks ago we held open house for school officials and Air Raid Wardens and Spotters. The entire club offered their services to the City of Holyoke to help in the nation-wide model building program. A very interesting program was presented explaining gas and rubber powered ships. Moving pictures were shown of our last sanctioned meet.

Pennsylvania

Harry G. Vogler Jr. of 1633 Duffield Street, Pittsburgh, president of the Tri-State Association Model Airplane Clubs, writes as follows:

"The model builders in the Tri-State area, with the view of presenting a solid front have organized and are developing in firm strides with the view to promote contest flying and model aviation development. This organization was determined that the Tri-State area shall have a voice in the affairs of national model aviation activities, and will raise said voice when they see fit.

"They are determined that model aviation shall have national recognition and have drawn up a contest calendar that is equitable and shows real flying activities over this area for 1942. The model builders feeling that this is the only manner in which they may secure the recognition due them, elected Harry G. Vogler Jr. of Pittsburgh, President; Mr. J. W. Hilligas, Cleveland, Ohio, Vice President; and E. C. DeLanie, Canonsburg, Pa., Secretary-Treasurer.

"It is believed that much may come of this organization of model aviation clubs in which already there are forty odd clubs enrolled."

The spirit of this association in regard to its determination that model aviation shall have national recognition is highly commendable. Let us hope that other clubs organize into a strong front to bring the value of model aviation to the attention of our government.

Singapore

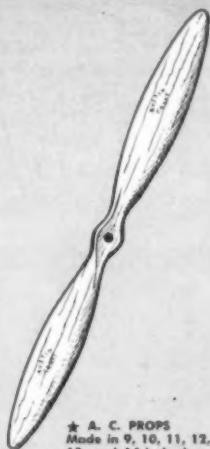
Here is an interesting sidelight on Singa-

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pore's futile defense. Possibly some of the news to the effect that Singapore was defended by a large number of airplanes was based on the following item:

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One shipment of 2,700 aeroplane models has left Britain for Singapore. The value of them is round about £500.

Since war broke out no fewer than 300,000 of these models have gone overseas from the same model aircraft factory in London. They are shipped in parts all ready to be assembled by model enthusiasts in both hemispheres.

There is a practical side to the hobby: putting together these realistic little Hurricanes, Spitfires, Westland Lysanders, Blenheims, Wellingtons, Messerschmitts, Heinkels and others is an ideal way to train for aircraft "spotting."

This was sent to us by Robert Williamson, Mowbray House, Norfolk Street, London, W.C.2, England.

The Nationals

J. Robert Matthews, captain of the Montford Model Airplane Club, 1829 N. Montford Ave., Baltimore, Md., has some ideas concerning when the Nationals should be held.

"The boys of Baltimore, Washington and

Virginia have gotten together on a suggestion to hold the national contest on July 6th until July 10th. This would give a lot of us defense workers 'a break' and would be more convenient for many other model builders who live from 500 to 800 miles away from Chicago.

"By holding the contest on the date we suggested, it would give fellows Saturday and Sunday to get there and Saturday and Sunday to get home. This would only make us lose five days' work."

Minnesota

We have a letter directed to Mr. Albert L. Lewis of the A.M.A., written by Lytton Calroy of the St. Paul's Modeleers Club, 572 N. Snelling Ave., St. Paul. He writes:

"Out here in this frugal Scandinavian country many miles from A.M.A. headquarters, we have a problem confronting our Modeleers Club as well as other Clubs in Minnesota.

"We are sponsoring the Modeleers Club at considerable actual expense, time and prizes, and are interested in enlarging the membership to over 100. However, we have had no leverage on the boys such as the A.M.A. has by requiring all fliers in sanctioned meets to join the A.M.A.

"Our club has just voted that in the next sanctioned meet, those who enter must show paid-up memberships in club in towns where they live. We want Minneapolis, St. Cloud, Winona, Austin, Fairmont and others to do the same. We want your approval of this method for better organizing the model flyers. We are helping A.M.A. build up its membership and now we need your back-

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ing to build up local clubs. There are too many model builders who enter a meet, pay their A.M.A. dues, win prizes and are of no value to a club whatsoever. We think this should be stopped but won't work if we are the only club in Minnesota that does it."

May we comment on Mr. Calrow's letter? We believe that such a procedure borders on dictation and forces modelers to join a club when possibly they are of the type that do the best work when working alone. Certainly some method can be worked out wherein these individualists, and usually scientific-minded boys, can contribute to the contest in which they take part!

We see no reason why a leverage should be used on these boys to force them to join any club. The only way to accomplish this is to create the desire within the boy to join. In this way the club will be induced to follow the highest standards and make it attractive to such boys.

Notices

Bobby Joe Combs of Comanche, Texas, is interested in joining a model airplane

club near his home. If there is any such club would you please write him your address?

We have more requests for "pen pals." They come from: J. Chibbins, Hellet Lodge, Tennis Court Road, Cambridge, England, and from: Karl K. Ives, Clinton, Illinois, R.F.D. 3.

Correction

In our recent report of the Prop Spinners' second annual contest we stated first place was awarded to Mr. Bartos. This is an error—Mr. C. Giesen was the winner.

Coming Events

April 26—San Diego Aeroneers—seventh annual gas model meet, held at Camp Kearney Mesa, the original model airport. Entry blanks obtainable from Franz Secrest, 816 Tangier Court, Mission Beach, Calif.

The following list of events are part of the Winter Program of the St. Paul Modelers Club, Hamline Playground, Snelling & LaFond, St. Paul, Minn.

April 14—Francis Chaffee on "G-line

flying." Also talk: "Loyalty to Club and Nation."

April 21—Talk on Wasp and Wright motors. Talk on Compensation—being a Club member.

April 28—Talk on flying. Talk on Fair Play, team work, meet cheating, parasites.

Bring old paper to each meeting and help pay rent at airport. Many speakers will be added to this list. See Model race cars each Sunday afternoon at Palace Play-ground.

May 31—Sanctioned Meet—4th Annual St. Paul A.A.A. Regional Model Air Meet.

The Tri-State Association Model Aviation Clubs have planned an exceptionally active season. Mr. Harry G. Vogler of 6133 Duffield St., Pittsburgh, Pa., will gladly send full details and entry blanks to all interested. Events already scheduled are:

April 12—Pittsburgh-Butler, Unit 1. I.G. M.A.A.

April 18—Pittsburgh-Pups Foot, Novice Meet

April 19—Pittsburgh, Pa., Model Wings

April 26—Pittsburgh-Butler, Allegheny Mountain Area

May 3—Pittsburgh, Pa., Model Wings

May 10—Pittsburgh-Butler, Allegheny Mountain Area

May 17—Canonsburg, Pa., Gunners Meet

May 24—Oakmont, Pa., Oakmont Aero Club

May 30—Huntington, W.Va., Huntington Advertisers

May 30—Pittsburgh-Pups Foot, Novice Meet

May 30-31—Cleveland, Ohio, American Air Lines Club

June 6—Buchannon, W.Va., Strawberry Festival Meet



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June 7—Pittsburgh, Pa., Model Wings
 June 14—Pittsburgh, Pa., Buhl Planetarium
 June 21—Allentown, Pa., Penna. X Change Club
 June 28—Cleveland, Ohio, Red's Model Shop
 July 4-5—Pittsburgh, Pa., Pittsburgh Press Elimination
 July 12—Pittsburgh-Butler, Unit 1, I.G. M.A.A.
 July 18—Pittsburgh-Pups Foot, Novice Meet
 July 19—Steubenville, Ohio, Skyhawks Meet
 July 26—Pittsburgh-Butler, Allegheny Mountain Area
 August 4-5-6-7-8—Chicago, Ill., Nationals
 August 9—Steubenville, Ohio, Skyhawks Meet
 August 15—Pittsburgh-Pups Foot, Novice Meet
 August 16—Pittsburgh, Pa., Model Wings
 August 23—Pittsburgh-Butler, Allegheny Mountain Area
 August 30—Canonsburg, Pa., Gunners Model Meet
 September 5-6-7—Pittsburgh, Pa., Scripps Howard Jr. Meet
 September 12—Pittsburgh-Pups Foot, Novice Meet
 September 13—Pittsburgh, Pa., Model Wings Championships
 September 13—Clarksburg, W.Va., W.Va. State Meet
 September 20—Steubenville, Ohio, Skyhawks Championships
 September 27—Pittsburgh-Butler, I.G. M.A.A. Championships
 October 3—Elkins, W.Va., Forest Festival Meet
 October 4—Pittsburgh-Butler, A.M.A. Championships
 October 11—Canonsburg, Pa., Gunners Championships
 October 11—Pittsburgh-Pups Foot, Novice Championships
 November 11—Clarksburg, W.Va., V.F.W. Meet

VICTORY.

Modeling Planes for Uncle Sam (Continued from page 21)

should be taken in trimming the block to the scribed fuselage lines in order that the finished product is exact in both size and shape. Shaping the fuselage in accordance with templates "A," "B," "C," and "D" may be accomplished by the use of a fixed blade knife, spokeshave, plane or wood rasps. Frequent use of the templates during this operation is essential. Sandpaper is used in the final shaping operation. When completed the fuselage should conform to plans in outline and in crosssection.

The wing is made from a block measuring $1\frac{1}{4}'' \times 1\frac{7}{8}'' \times 6\frac{3}{8}''$. Using a small jigsaw or similar tool, shape the outline of the wing in plan form. Tapering the wing and setting the proper dihedral angle is clearly illustrated in the drawings. First outline the front view of the wing as indicated in the plans. Cut away excess wood shown as shaded areas. A plane, draw knife or spokeshave may be used. In most cases, the builder will find the draw knife best suited to this operation.

After the block has been cut to form the plan and front view outlines of the wing,

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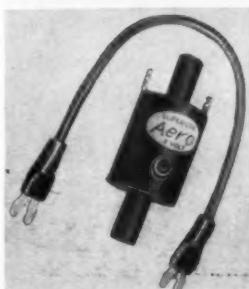
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with a hard pencil scribe a line indicating the leading edge. Shape the wing as indicated by the drawing of the "Typical Section" on the plans. The same tools as used in shaping the fuselage are used in this operation on the wing. Extreme care must be used when shaping the section towards the center or root of the wing.

As indicated, the center portion of the wing block is in effect used as wing fillet and lower fuselage central portion. The abrupt change in shape at this section of the block may be accomplished with various size rat-tail files. When completed and set into place, the lines of the fuselage and central portion of the wing block must be such as to flow together without breaks or low spots.

Prior to assembling the wing and fuselage, however, the proper dihedral angle must be set. The manner in which this is accomplished is quite obvious. First cut the wing along the center line. The root end of each panel is then beveled and the ends placed together. A quick drying cement is used to glue the wing together. The dihedral gauge should be used in checking the angle. Trim the upper surface of the center section to get a flat surface prior to cementing it to the fuselage. The movable surfaces such as ailerons, tab and flaps should be indicated by a slight groove in the surface of the finished wing. Referring to the final assembly diagram, cement the wing to the fuselage as indicated.

Next construct the belly block. This is formed from a block 3/16" x 1/2" x 1-3/4", designated as number 5 on the plans. Formed in a manner similar to that used for fuselage and wing, with the exception of the Vee surface on the top, the belly block is simple to construct. Care is required in cutting the Vee surface so that it forms a flush fit with the lower surface of the wing. When this has been done, cement the belly block in place.

The tail surfaces are made from 1/16" stock 1-1/8" wide and 3-1/2" long. Note that the upper portion of the stabilizer center section is left flat so that a flush fit with the bottom of the rudder is achieved. When the tail surfaces have been formed, indicate movable sections prior to assembly.

Except for landing gear knee blocks, exhaust and air scoop or intake, all other details are omitted from the model on Government order. The knee blocks are carved from 3/16" stock while the exhaust and air intake may be made from the scrap left over from the tail surface stock. The essential details, having been formed, must be glued to the airplane model as shown in the drawing of the final assembly. You will note that these parts have not been numbered as have been the five main subassemblies. After the model has been assembled plastic wood may be used to fill in any recesses due to improper joints. In few cases, however, should this be necessary.

The model is now ready for finishing. Apply several coats of clear lacquer, allowing each coat to dry thoroughly, however, before applying the next coat. Sandpaper the surface after each coat has dried. A final coating of dull black is applied to the model. Note that on Government

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of American planes now going into R.A.F. service: "Buffalo"—the Brewster 339 single-seat fighter; "Boston"—the famed Douglas DB-7 attack-bomber; "Baltimore"—the Martin 167-A3 attack-bomber. Already in service: "Harvard"—the North American NA-16-3 trainers; "Digby"—the Douglas B-18A bombers.

The EAGLE SQUADRON, of which we shall hear a great deal in the future, has been formed as a special All-American can fighting group with the Royal Air Force. At present undergoing training in fast Miles Master two-seaters, the 34 officers will be equipped with Supermarine "Spitfires" when they are ready for service. The King has approved the formation of the squadron, which will be led by Squadron-Leader William E. G. Taylor, formerly of the 5th Fighting Squadron, U. S. Navy. Honorary Commander is "Group Captain" Col. Charles Sweeney, founder of the group. In the squadron are such famous names as: Robert Sweeney, Bateman, Bono, Kennerly, McGinnis and Tobin.

PRODUCTION: Canada is now turning out more than 100 training planes monthly and upon completion of the 800 required for her training program, full production will be concentrated on Hawker Hurricane and Bristol Bolinbrooke (version of famed Blenheim) combat planes. Britain, herself, is now producing 50 planes per day and is receiving more than 500 planes per month from the U. S. "Germany and Italy are now producing bombers which are 69 miles an hour faster than the best U. S. and British models," states Major-General Aldo Guglielmetti, Italian Air Force design-engineer. Fighters, too, are faster and more heavily armed and will soon be introduced over London.

Paul Louis Weiller and Marcel Bloch, two of France's leading airplane designers and manufacturers, have been interned in Vichy pending outcome of the abortive "War Blame" trial now in progress.

An agreement between the German-owned Condor Airline and Brazilian Snapp, navigation company, has been reached, lending credence to reports of German encroachment on Brazilian and South American air commerce.

Vice Air Marshal C. H. B. Blount, head of Royal Air Force squadrons in France before the "blitzkrieg," was burned to death when his Hurricane fighter crashed and caught fire after a take-off on inspection tour near London.

A Douglas DC-2 airliner, piloted by American W. C. Kent, was shot down near the Yunnan-Kweichow border and its nine passengers killed. Kent had been a pilot on the China National Aviation Corp.'s service for three years.

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INTERNATIONAL

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AIR LINES: President G. T. Baker, of National Air Lines, recently set a new cross-country record when he sped from Burbank (Calif.) to Jacksonville (Fla.) on the delivery flight of his line's new Lockheed Luxury Lodestar in 9 hours, 29 minutes and 39-1/2 seconds. His 2357 miles flight was made with a single refueling stop at Dallas, Texas. Howard Hughes, in a standard Lockheed 14 Transport, holds the record with a 2478 miles flight to New York in 10 hours, 34 minutes two years ago. Some calculation will be necessary before it is decided to homologate this mark. Baker is one of the few airline presidents holding a transport license.

American Airlines has been granted permission to extend its service southward from Dallas to Ft. Worth and from El Paso to Mexico City. The former con-

nexion will stop at Monterrey en route to the Mexican capital.

An 115-m.p.h. typhoon wreaked considerable damage on Pan American Airways' Wake Island Base. The 35 men stationed there were unhurt, but the damage to hangars, housing, and radio equipment was costly. The tiny islands project only a few feet out of the water at its highest point. Schedules will be retarded until repairs can be made to the strategic repair base.

Donald H. Connolly, Administrator of Civil Aeronautics, has appointed Arlin E. Stockburger as administrative consultant and Charles I. Staton as assistant administrator. The A.C.A. replaces the Bureau of Air Commerce and the Civil Aeronautics Authority.

The War Department will foot the bill for BOEING's ten million dollar expan-

sion program at its Seattle and Wichita plants. Seven million will aid in increased facilities to produce the huge B-17D models and three millions on the Stearman Division plant producing biplane primary training ships.

Two hundred and twenty REPUBLIC fighter-dive-bombers ordered by Sweden have been re-routed by the State Department to England in accordance with that office's new policy of supplying no neutrals with war supplies. Ten North American dive-bombers have also been held up on delivery to Thailand (Siam).

PERSONALITIES: GLENN L. MARTIN has been awarded the annual Daniel Guggenheim medal for outstanding contributions to aircraft design in 1940.

JACK FRYE was unhurt when a twin-engine Douglas DC-2 airliner folded its retractable landing gear while landing near San Diego. The T.W.A. head was at the controls as the ship nosed over.

EARL ORTMAN, famed racing pilot, is still alive and well, he reports, and is ferrying Hawker Hurricane fighter planes from factory to field in England. This spikes reports he was killed while ferrying Hudson bombers across the Atlantic.

KATHERINE RAWLS THOMPSON, former champion aquatic star, is now a licensed pilot. She plans to get an instructor's rating and teach flying.

Gliding may at last be put on a commercial basis it has been reported from San Fernando, California where pioneer sailplane designer, Hawley Bowlus, is busy erecting a new addition to his factory. First heavy financing of a glider firm was accomplished recently when Donald Douglas, Jack Northrop and others advanced nearly \$500,000 towards the erection of a new building, installation of new equipment and hiring of additional personnel. In the belief that the sport of gliding will inculcate a desire for air-travel and aircraft purchasing, the underwriters will supervise the large scale production of the Albatross, Baby Albatross and Sailplane models.

Initial orders for Lockheed's giant four-engined "Excalibur" have been received from Pan American Airways with the purchase of three at a cost of \$710,000. Tricycle landing gear, triple ruddered, the new ship will have a top speed of 262 miles per hour with a span of 95 feet and a gross weight of twenty tons.

Dick Farman, one of the three Farman brothers who supplied hundreds of Farman training planes to the Allies during World War I passed away in Paris at the age of 64. Although flimsy in appearance, the Farman trainers were sturdy, stable and dependable. Later Farman military and commercial transports, bombers, etc. were models of advanced aerodynamic design and one flew from Paris to Buenos Aires and thence to Santiago in 58 hours in 1937.

CAA continues to deny applications for air routes and to postpone hearings. Growing more unpopular daily, the new supreme command of aviation in the United States will soon be called by Congressional leaders for investigation into its activities, it has been reported.

Main production problem in aircraft construction is to keep installation of fixed equipment at the speed maintained by fuse-

lage and wing-jig departments. A medium-bomber can be completely assembled in the fuselage jib in two eight-hour working days while as much as two weeks are consumed in the thousands of pieces of equipment which must be bolted and screwed into the interior of the ship. Small military plane manufacturers have partially solved this problem by constructing the forward portion of the fuselage of welded steel tubing and making it possible for workmen to stand alongside the fuselage and make the various installations after which side panels are bolted into place and the ship run off the line. Martin's new attack-bomber however, has a new solution to offer. The new Model 167's for the French Armee de L'Air are built in two halves and assembled by bolts along the center line. Production at the Martin Plant has now assumed automobile chain-line speed.

VICTORY.

Model Designing Simplified

(Continued from page 27)

assembled. Make sure that all the corners are right angles and that the parts are not cemented together in a warped position. Bulkhead A should not be assembled as a unit; cement the vertical side pieces to the longerons at this point when assembling the fuselage sides.

Start assembling the two sides one to another by cementing in bulkhead J and the crosspieces X and X' of bulkhead A. Next insert bulkhead B and C and top and bottom crosspieces at D, E, F, etc., in consecutive order. Make sure that the fuselage is in proper alignment and not warped while the joints are drying. Hold parts in place with pins until dry.

Next, cement 1/32" balsa sheet to the top and underside of the fuselage. On top, this runs from A to H, on the bottom from A to J. The sides are covered with 1/32" balsa at the nose as indicated, composed of two sheets pointed at their rear ends and joined along the centerline of the fuselage side. The long edges of these sheets extend along the longerons from A to a point slightly beyond E; tapering the sheets in this way allows a gradual reduction of stresses rather than an abrupt change. Square ends would cause excessive stress where parts join.

Make sure however to insert the side gusset blocks top and bottom at A and 1/16" thick blocks and upper cross-block on either side of bulkhead H. At rear, cement fuselage bed to the counter-sunk section of the fuselage, its forward end tight against bulkhead H.

Engine

Next step is to cut parts of the engine mount. These are: engine bed, stringers, the veneer firewall, the vertical hardwood pieces to be glued to the wall and vertical veneer panels, also a small veneer strip to span the engine bearers at the top, as well as balsa pieces to form the plug cemented to back of firewall. These are 3/8" square and include two vertical pieces and one crosspiece at the bottom. Between the engine bearers and cemented to the firewall there is a crosspiece of hardwood.

Start the assembly by gluing together the engine bearers. Next fasten the birch

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veneer pieces of the bearers with cement and small brads, fastening the vertical hardwood struts to their rear edges. Be sure these are perpendicular to the engine bearers. When finished insert the rear of the engine bearers through the firewall, cementing each assembly in place. Next cement the crosspiece between them to the front face of the wall. Fasten a crosspiece at the rear end of bearers and a veneer strip from one bearer to another directly in front of the wall. When all the cement is dry the balsa block may be added to the rear.

When the whole unit is completed, holes for bolting the engine to the bearers should be drilled vertically through their nose. The landing gear is fastened to the front face of the firewall by small clips formed as shown on the drawing. Through these and on the front of the firewall are holes properly located.

When the landing gear is completed and the wall is in place assemble this with the cleats riveted tightly to the front face of the panel wall. Batteries and coil are to be mounted between the rear ends of the engine bearers, to which terminals for wires can be fastened. A box mounting, slung between the two bearers, is satisfactory.

Cowl

Make the two halves of the cowl of medium hard or hard balsa, hollowing each one out approximately $3/16"$ to $1/4"$ thick. A small hole is cut out at the rear of its lower side to act as an oil drain. Hooks are formed and cemented to the cowl to hold it in place. The rear end of this should be long enough to pass completely through the cowl with a bend of slightly more than 90 degrees. All of the assembly hooks should be made and assembled; two on each side of the fuselage on the nose, two on each fuselage side at bulkhead I and two at bulkhead J.

The stabilizer is held in place by rubber bands passing around these and around hooks directly above them fastened to the stabilizer. Stabilizer hooks are formed in an inverted "U" with curled-up ends. These are fastened to the front and rear spars as shown in the drawing.

Before covering the fuselage and assembling the units together, make sure that the stabilizer, motor mount and cowling fit snugly and properly in place. Slight adjustments of bulkheads C and A may be required to hold the motor mount rigidly; if so, either cut away the restraining pieces or cement in place extra balsa

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pieces to make a tight fit. The fuselage sides then may be covered with paper and the lower part of fin cemented to the rear lower side of fuselage. These can fit into a groove cut in the bottom and slightly through bulkheads H, I, and J; this will help to hold the fin rigidly in place.

Do not overlook the fact that the fin extends up rearward of bulkhead J. Streamline balsa blocks are then cemented to it and the rear of J to extend the lines of the fuselage rearward to the fin edge.

When the finishing touches are given to all units, edges being rounded with sandpaper, all surfaces should be given several coats of dope, allowing each one to dry, sanding each one gently after it is thoroughly dry and before applying the next coat.

After following through the design of a plane step by step the builder should find little trouble in constructing it; all details unquestionably will be well fixed in his mind. The plane shown on the drawings here will make a remarkable contest job; we recommend it to all who wish to fly during the coming season. It is exceedingly stable both in horizontal and climbing flight and should not be affected to any degree by wind. The author will be glad to answer any questions concerning its design and structure for those who care to write.

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